

1995

**A focus on learning : quality in teaching & learning : the
proceedings of the Teaching & Learning Forum, Edith Cowan
University, Perth, February 1995**

Laurie Summers (Ed.)

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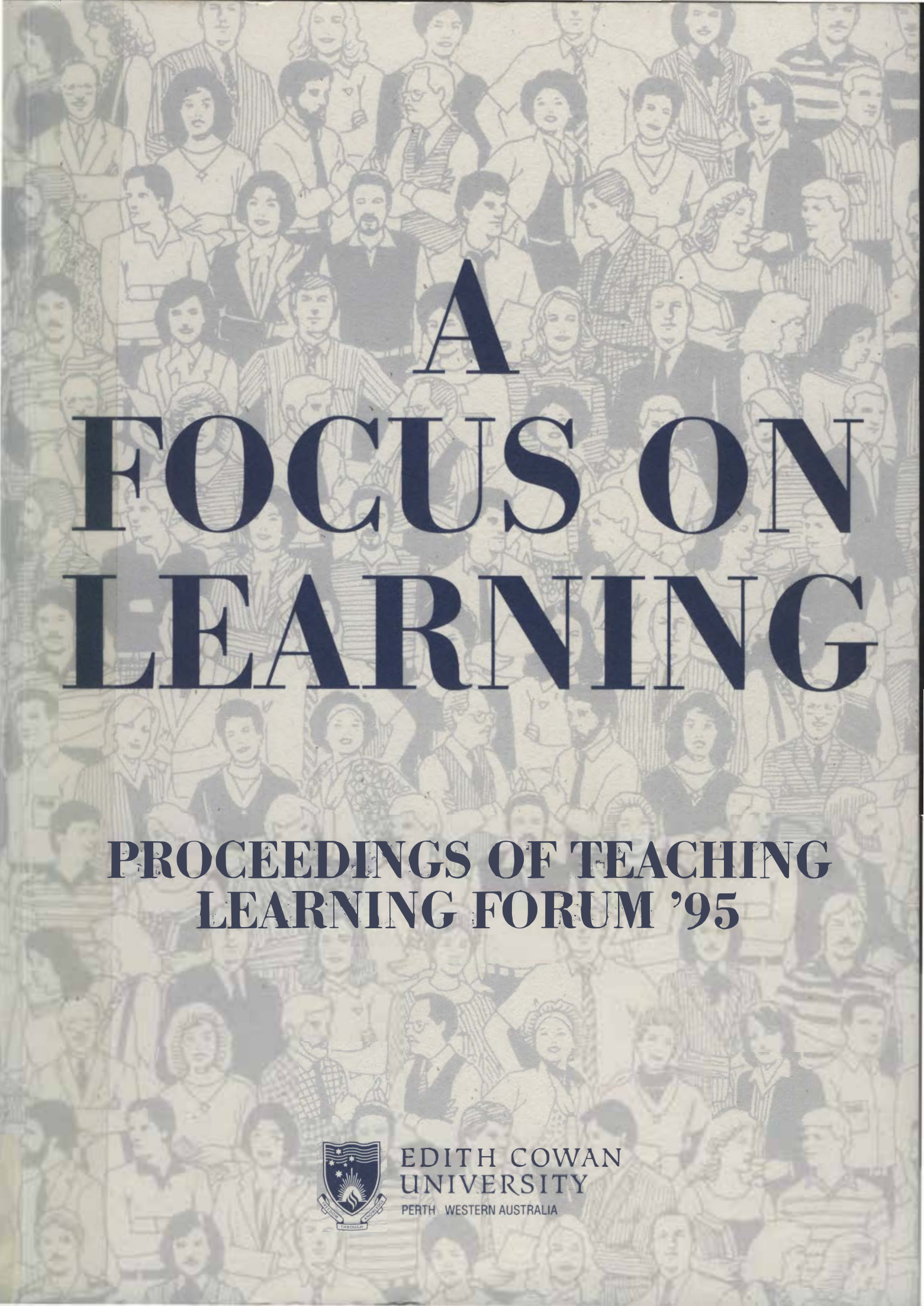
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A FOCUS ON LEARNING

**PROCEEDINGS OF TEACHING
LEARNING FORUM '95**



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Quality in Teaching & Learning

A FOCUS ON LEARNING

Edited by Laurie Summers

**The proceedings of the Teaching & Learning Forum
Edith Cowan University
Perth
February 1995**

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PREFACE

These papers represent the proceedings of the fourth Teaching and Learning Forum conducted in Perth from February 7-9, 1995. Curtin University hosted the first two Forums and we at Edith Cowan University the third and fourth. In 1996 the honour (and the hard work) transfers to Murdoch.

The Forum's objectives were:

- To bring together people in higher education who are interested in practical teaching issues (Lecturers, managers, administrators, students, support, general and technical staff).
- To share ideas, information and practices in a variety of mutually supportive, friendly and co-operative ways.
- To celebrate quality in teaching and learning and raise the status of teaching and learning in tertiary institutions.

We believe that these were achieved.

This set of proceedings is not organised around a set of sub themes, but rather is presented in alphabetical order with outlines of workshops and short presentations taking their place alongside research papers - as was the case at the Forum.

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INTRODUCTION

Though there were no delineated sub-themes it soon became obvious that the focus on learning that was to be the hub of the Forum would lead the participants to consider such issues as:

- actively involving students in their learning and
- the teaching and development of lifelong learning skills.

Accordingly the Keynote speakers were carefully selected as people who had expertise and insight in this area.

Phil Candy is professor and director of the Academic Staff development Unit at the Queensland University of Technology in Brisbane. In his research, Phil has investigated primarily the theoretical and conceptual aspects of adult education and constructivist approaches to research and teaching. His published works include a book *Self-direction for lifelong learning*. Recently he was the Principal Investigator for a Higher Education Council project on *Developing Lifelong Learners Through Undergraduate Education*.

Gus Pennington is Professional Adviser for academic staff development at the UK Universities' and Colleges' Staff Development Agency and, until recently, he was Head of the Educational Development Service at the University of Teesside. He is a national Quality auditor with the Higher Education Quality Council and has been closely associated with the national training scheme for Quality Assessment of Teaching in UK Universities. Both activities bring him into contact with academics in their teaching role and reflect a long standing interest in effective classroom practice.

A synopsis of their addresses to the Forum is presented prior to the alphabetical listing of papers, short presentations and workshops.

I would personally like to officially recognise the efforts of Rhondda Tilbrook of the Educational Development Unit whose assistance and organisational skills were much appreciated and certainly contributed to the success of the Forum.

Laurie Summers
Head, Educational Development Unit

DEVELOPING LIFELONG LEARNERS THROUGH UNDERGRADUATE EDUCATION

INTRODUCTION

I would like to begin by thanking the organisers for inviting me to be one of the Keynote speakers at this Forum.

A concern with lifelong learning has a noble pedigree; indeed, as I will show at the end of this talk, it can be traced back to the very origins of higher education in Australia as elsewhere. However, for the purposes of this paper I will start with a quote from the 1990 Report of the Senate Standing Committee on Education, Employment and Training (the Aulich Committee) which came out under the title *Priorities for Reform in Higher Education*:

Australia is producing graduates who all too frequently are not familiar in any disciplined sense with the society in which they are going to practise their chosen profession, who are not critical, analytical and creative thinkers, whose education does not provide the basis for adequate flexibility, who are not sufficiently attuned to the need for lifelong learning and who are not good communicators. In short we are producing highly trained technicians who are under-educated in the broader sense of the term. (*Aulich Report*, 1990, p.3)

At least some of these ideas were picked up again and echoed a couple of years later in the Higher Education Council's report *Achieving Quality*, where it was stated:

It is broadly agreed that if higher education is to enable graduates to operate effectively in a range of activities over a period of time, a lifetime in effect and not just immediately after the studies are completed, then it must develop the characteristics that support learning throughout life. Discipline specific skills in many areas have only a short life, and what will be needed in even the medium-term cannot be predicted with any great precision. (*Achieving Quality*, 1992, p. 20)

Thus, the 'birth certificate' for the research project I will talk about today can be found most immediately in the document *Achieving Quality*, although a concern with lifelong learning is in fact much older.

THE PROJECT

In 1993, there appeared in the public press under the title of "The enabling characteristics of undergraduate education," a call for expressions of interest in undertaking a project to be jointly sponsored by the Higher Education Council and the Australian Vice Chancellor's Committee. A group of us at QUT successfully bid for the commission. What we were asked to do was to examine the degree of active commitment by institutions of higher education to their graduates' willingness and ability to continue learning throughout their lives. We investigated and made recommendations on the ways in which the higher education system itself and institutions within it can promote and implement the principles of lifelong learning and enhance students' learning-to-learn skills in the course of their undergraduate studies.

To give you an overview of the *Report* and how we undertook the study, I will provide a very compressed picture of the project. We started with what one would normally expect; a literature review, through which we identified about 1,000 items of English language literature. We tracked down and read about 600. We also advertised the project in the *Higher Education Supplement* and *Campus Review* and received some sixty submissions; from individual graduates, from professional societies and associations, from employers and from institutions of higher education. We looked at the mission statements of every publicly funded university in Australia; interestingly, we found that of a total of 37 only 8 mention the development of lifelong learning as part of their mission.

As a kind of 'snapshot' of what was going on generally in higher education, we wrote to the course co-ordinators of 18 randomly selected undergraduate programs across Australia and asked for documentation about each course. That gave us a sense of what a representative group of courses might be said to be doing across the Australian higher education system. In order to identify some 'exemplary' undergraduate degree programs, we also examined every Disciplinary Review in Australia since 1980, and we also got in touch with professional societies and associations and accrediting bodies. We asked Vice Chancellors to nominate which of their undergraduate programs they thought best exemplified a commitment to the principles of lifelong learning. Using these various approaches, we tried to 'triangulate' so that more than one source was saying "this is an interesting course," and as a result we ended up with 13 examples of particularly good practice. We also profiled seven student support services, by which I mean libraries, computer based education facilities, or learning and study skills units.

Having identified the programs we wanted to focus on, my colleague, Dr Gay Crebert, actually did a lot of the leg work. She spent nearly seven weeks undertaking interviews with staff, students and graduates across Australia. For every one of those 13 programs, she interviewed first year and third year students, graduates, employers, teaching staff and support staff. Overall, she undertook 160 interviews which yielded 3,000 pages of interview transcripts. These were analysed in two ways. To write the body of the report we took a horizontal slice and examined the responses of, for instance, all the first year students, all the graduates, or all the teaching staff. In this way we were able to search for underlying themes and recurrent issues. To write the ten case studies which form the second half of the report, we actually explored what everybody associated with each particular program said about it; aiming for what ethnographers call 'thick description.' Thus, the report, which is some 300 pages long, consists of two parts: some generic findings and overall recommendations in the first part, and then 10 detailed case studies in the second part.

THE REPORT

That's the background. Now let me take you into the *Report*. The first thing we did was to ask ourselves "Why is this suddenly such a hot topic?" If lifelong learning has been around for 2,000 years or more, and has made periodic reappearances in the literature of Australian education including Australian higher education, why is it suddenly something that the Government would seize onto? We identified the following six factors which, together, seem to have pushed the need for lifelong learning into the limelight recently:

- Continuing shift to an information society
- Competing influences of specialisation
- Increasing internationalisation
- Explosion of knowledge and technology
- Microeconomic reform and the changing workplace
- Emergence of new occupations and careers

This is not an exhaustive list but just an indicative one.

The second question we asked was "What kind of learning do people have to do when they graduate?" I dare say that if I asked you about the kinds of learning experiences that your graduates have, you may not know a lot about them. Although you may know about their professional competence, about how they fit into the workplace, about their employability or about their starting salaries, it is unlikely that you have given a lot of thought to the issue of how much or what sort of *learning* your graduates actually undertake after leaving university. We identified four categories of learning that we focused on.

The first one is workplace-based learning. There is a huge body of literature about the kind of learning that happens in the workplace, some of it mediated by trainers, some of it adventitious and serendipitous or accidental. The point is that we don't know precisely what sort of workplace-based learning any particular graduate, or for that matter, any cohort of graduates is likely to encounter. Take law as an example; about 50% of law graduates don't practise the law as such. Of those who do, some will become a sole practitioner in a country town; some will go into a small firm, some into a large firm or a multinational; some might work in the corporate law department of a big company, a bank or a government department; some might work for an international agency or for a non-profit company. All these people are practising the law in one form or another and learning about the demands of their jobs.

How can one degree adequately prepare for such a diversity of potential learning opportunities and trajectories? It is not just a single unitary path that our graduates follow in learning at work.

The second category of learning is *continuing professional education* which may be offered by a professional association, a university, a government agency or a “for-profit” provider. In many professions people are obliged, or at least expected, to attend these activities to maintain currency, or in other words to upgrade and to keep up with new developments. Such learning commonly resembles that which is undertaken in university, although there are significant differences including the absence of formal assessment requirements.

A third type of postgraduate learning is *further formal study*; however there are a number of sub-headings within this. Some undergraduates finish a degree and then do another one. Others undertake postgraduate awards, which may be post-graduate in time, or post-graduate in level, or both. There is also an interesting group of people who, after a degree, undertake a qualification in TAFE or in a vocational college. This latter trend is making a big difference to the culture of teaching and learning in TAFE as well as confronting vocational educators with the need to provide reciprocal pathways in terms of academic credit and advanced standing for students who already possess a qualification higher than that for which they are studying.

The fourth and final category is *self-directed learning* which comprises a huge - indeed virtually unlimited - sea of opportunities whereby people as adults and as citizens seek ‘to be,’ ‘to become’ and ‘to belong.’

After considering these various categories of learning, the next question we asked was “What kinds of skills and attributes, abilities and predispositions would a person need to be able to cope with such a range of possible learning contexts and challenges?” We read widely, we talked to our graduates, we peered deeply into our own experience and we came up with over one hundred different qualities. Out of this total list we distilled five:

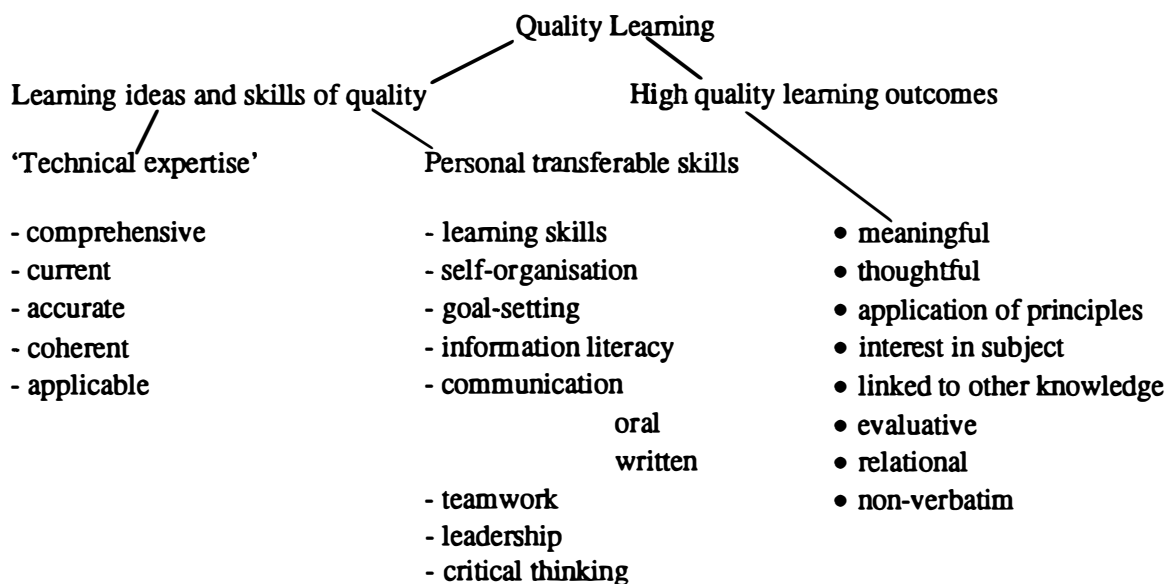
- an inquiring mind
- ‘helicopter vision’
- information literacy
- a sense of personal agency; and
- a repertoire of learning skills

You and your colleagues might not agree with these five. You might combine them into a smaller number, or add some that we have left out. The important thing, however is to discuss what are the generic learning skills and attributes you would like your graduates to possess, and then to consider how they are going to be developed during the course of their studies.

Armed with this sort of profile of the lifelong learner, we then turned our attention to various aspects of the undergraduate experience which might plausibly contribute to developing such attributes. In our terms of reference, we were asked to look at five components in particular: the content of the curriculum, the structure of the curriculum, teaching approaches, assessment strategies and student support services. However, before considering these five facets I would like to explore briefly the relevance of this study for teachers in higher education.

By talking about teaching as a decontextualised activity we actually lose sight of its purpose, which is to enhance or to facilitate learning; in fact the ultimate test of teaching quality is whether it leads to quality learning. This then raises the question: “What is meant by quality learning?”

There is no definitive or simple answer to this question, but in the following diagram I have attempted to identify and capture two major components with respect to higher education: the first is learning *ideas and skills of quality*, by which I mean learning outcomes which are valued by and worthy of higher education. The second is learning those “ideas and skills” (or other accomplishments and acquisitions that are obtained through higher education) *in a high quality way*. It will also be noted that the heading “ideas and skills of quality” further subdivides into the ‘technical’ or substantive content of the degree program, and some generic or transferable skills and attributes.



Although this model is highly oversimplified, nonetheless it directs attention to at least three major dimensions of quality in learning: (i) the substantive content of the course or program; (ii) the concomitant learning outcomes which graduates are expected to gain as a consequence of their study at university (such as personal transferable skills); and (iii) the qualitative aspects of the learning in which students engage. We approached the task of looking at undergraduate programs with this simple model in mind, attempting, as I said before, to examine the content and structure of the curriculum, teaching methods and assessment approaches, and student learning services, from the perspective of how they each contribute to the development of lifelong learning skills and attributes (the first item in the middle column). In the next part of the paper, I will turn attention to each of these five facets in turn.

Content of the Undergraduate Curriculum

The first of the five terms of reference was the content of the curriculum. Clearly it lay beyond our terms of reference, not to mention beyond our expertise, to make recommendations about the detailed content that should or should not be in any given degree; this is a decision for the content-matter experts who design and teach each individual course. But we did recognise that every undergraduate program comprises more than just substantive content or applied skills and knowledge. Each degree, we argued, should have three principal components: applied skills and knowledge; a firm foundation of general knowledge; and, certain personal and transferable skills and abilities. However, while every undergraduate degree might have these three components, their relative weighting will vary from case to case.

We were more definite in our argument that lifelong learning skills should be placed - conceptually at least - at the heart of every undergraduate degree program. At present, most undergraduate degrees are dominated by substantive disciplinary content; in some degrees - accounting, engineering, information science and so on - it can be as high as 90% that is prescribed. Wrapped around that disciplinary content is a thin veneer of generic skills; maybe some lifelong learning and a few contextual studies. However, because these components are at the edge, they are marginal. What we have suggested in the *Report* is the reverse; that all undergraduate degrees in Australia should aim to have at their hearts, the development of some Lifelong Learning competencies. Why? We advanced three reasons. Firstly, because the document *Achieving Quality* says that we should expect certain generic attributes of all Australian graduates and one of these is the ability to go on learning. Secondly, in our view, if pride of place is given to learning-to-learn, then the learning of complex and often rapidly changing disciplinary knowledge will be enhanced, accelerated and improved. Thirdly, the skills of learning-to-learn will endure long after the detailed and specific knowledge is forgotten. Although it is a bit trite, it has been said that if you give somebody a fish, you feed them for one day; if you teach them how to fish, you feed them for a lifetime. If you teach somebody how to learn, you are giving them probably the world's greatest take-home gift; the ability to learn things after you've disappeared off the scene, and indeed to shape their own destinies.

Structure of the undergraduate curriculum

In the same way that we cannot legitimately comment on the content of every course, except in the abstract, we cannot specify the ideal structure of each and every course in every field. However, our study showed that in order to produce lifelong learners, an undergraduate degree program should ideally provide:

- a systematic and integrated introduction to the field of study;
- a comparative or contextualised framework for understanding the field;
- an opportunity to broaden the student and develop generic skills;
- appropriate freedom of choice and flexibility in structure; and
- provision for the incremental development of self-directed learning.

I will comment briefly about each of these in turn. Firstly, the systematic and integrated introduction. We found that many courses, by bending over backwards to respond to student needs and interests, and by being extremely flexible and accommodating, actually never introduce the students, in any coherent way, to a body of disciplinary knowledge. The consequence often is that graduates of these programs have breaks and discontinuities in their knowledge base which show up when they attempt to learn more in later life, and especially when they choose to undertake postgraduate study. Some sort of solid grounding in an area guards against this possibility, while at the same time introducing students to the modes of thought in the particular discipline.

Our second criterion has to do with providing the graduates with a vantage point from which to understand both the antecedents and the consequences of their field of study and practice. If somebody knows about the limitations of their field, about how knowledge is created, about where it is going, and so on, then they are not just narrowly trained but rather more broadly educated.

Our third criterion relates to broadening the student and developing generic skills. This is important not least because society at large has the expectation that graduates will be better rounded and more fully educated than those with a narrowly vocational preparation. It is also important because, while much disciplinary knowledge is transient, there are certain other accomplishments - such as skill communication; team membership and team leadership; the ability to find, use, and evaluate information; and a capacity for critical thinking which should be the hallmark of any graduate irrespective of the field in which he or she has studied. I recognise that in many fields there is an abundance of disciplinary content which has somehow or other to be accommodated within the ambit of the degree, but in terms of lifelong learning, space must be found - or made - for this kind of broadening too.

The fourth area is also something of a challenge; freedom of choice and flexibility. It is a challenge because it involves giving up some of the control that academics traditionally exert over the curriculum. It is a challenge because different students might choose patterns of subjects or alternative pathways through them, which can seem messy and inefficient. And it is also a challenge to reconcile such freedom and flexibility with the goal of providing 'a systematic and integrated introduction to the field of study,' because students may wish to exercise choices that will lead them away from, rather than towards, a comprehensive understanding of the subject. However, notwithstanding these problems, flexibility and adaptability are essential features of the undergraduate degree. Increasingly, many students are mid-career professionals or people seeking particular skills or knowledge, and the degree structure must allow for choices to meet the needs and interests of such students.

Finally, there is the incremental development of self-directed learning. It strikes me that over the course we should probably be trying to devolve to students greater responsibility for valued instructional functions. This is not the same thing as dropping students into the deep end, and forcing them to sink or swim. But one of the hallmarks of the lifelong learner is the ability to take control of one's own learning, and I believe these skills should be intentionally and progressively developed throughout the undergraduate experience, so that by graduation, the students have had experience of setting goals, researching topics, and generally learning on their own. The 'staged withdrawal' of staff over the period of three or four years, however, should be both explicit and agreed, so that students recognise this as a legitimate part of the educational experience, rather than regarding it as an abdication of responsibility on the part of the academic staff.

Teaching approaches and assessment strategies

In addition to considering the content and structure of the curriculum, we were asked to identify those teaching approaches and assessment strategies which are likely to enhance the continuing learning of students after their graduation. Unfortunately, this study was not longitudinal, and it is therefore impossible to state with certainty which particular approaches will work. However, there is enough evidence to suggest that the following teaching approaches are most likely to encourage lifelong learning skills and orientations: teaching approaches which encourage students to engage in self-directed and peer-assisted learning; those which involve experiential and real-world learning; methods which make use of resource-based and problem-based learning; and those which include reflective practice and critical self-awareness. We also argued that universities should, wherever practicable and appropriate, make use of open learning and alternative delivery mechanisms.

We included this last item because very commonly people are obliged to keep up through a variety of different learning strategies, not simply through classroom instruction. I had the privilege recently of giving a talk to The Alliance for Continuing Medical Education in the United States. I was interested to find there that medical practitioners often receive, through the mail, CD Roms, video discs, floppy discs, VCR cassettes, audio cassettes and printed notes, all designed to help them with their continuing professional education. They also log on to bulletin boards, and download case notes and diagnostic aids from the Med-line medical data base in Washington. These are just practitioners dotted around in the countryside, not academics or researchers. In our view, we really need to be introducing our students to these technologies whilst they are with us, so that they are comfortable and competent with them when they graduate.

Turning to the issue of assessment, a good deal of recent research indicates that students are particularly sensitive to the assessment requirements that govern their courses. Many of them are, in the words of one researcher, "cue conscious" and are particularly attuned to the subtle - and not so subtle - hints that lecturers give out about what is to be assessed. If, however, students are accustomed to forms of assessment that encourage 'reproductive' rather than 'transformational' learning, in other words which simply test their factual recall or which treat knowledge as decontextualised fragments of information (as many multiple choice tests do), then they may have difficulty in adapting to the complexity and fluidity of learning in real world settings. Accordingly, we recommended assessment practices which evaluate *what*, rather than how much has been learned; which provide an opportunity to teach as well as to test; which depend largely on peer - and self-assessment; and which provide timely, constructive feedback that results in congruence between course aims and learning outcomes. In our view, those assessment practices which focus on the learner, rather than on the teacher are most likely to yield graduates who will be able to critically evaluate their own performance in whatever context they find themselves.

Student support services

Finally, we were required to look at the provision of student support services which are linked with lifelong learning outcomes. We focused on three:

- libraries and learning resource centres;
- computer-based education facilities; and
- study skills and learning support units.

In our study, we profiled seven of these student support services, in an attempt to distinguish those that simply concentrated on helping students to be better *students*, from those that had a broader mandate and sought to help the students to become better *learners*. I will not say too much about these various support mechanisms, as there is a whole chapter about them in the full *Report*. In brief, however, we discovered that there is an enormous reservoir of expertise embodied in many of these units, which needs to be harnessed to the purpose of producing lifelong learners. We found that the best way of achieving this is through routinely building such institutional support into undergraduate programs, and through treating the staff who work in them as full and equal partners in the design and delivery of the learning process.

A climate of intellectual inquiry

When we had completed our survey of the five basic building blocks of the undergraduate program - curriculum content, curriculum structure, teaching methods, assessment approaches, and student support - we had an uneasy feeling that a university could be attending to all five of these things, and yet still not be

producing lifelong learners. This was an intriguing problem, and so we asked the graduates, "how come?" Their answers were very enlightening, because many of them reported that lifelong learning did not seem to have been valued in the departments and programs where they had studied. It was not something that they saw being modelled by the staff and, in many cases, there was no real sense of intellectual excitement in the department. So we added a sixth term of reference; creating a climate of intellectual enquiry.

I guess that our plea would be for a return to some of the traditional liberal and humane values of higher education. Why did you choose to work at university? To be part of a giant technical college? No: because you're excited by ideas; you're stimulated by debate, by research, by reading, and by spending time in the laboratory or the library. Most of us had more idealistic motives for getting involved in university life, yet we find that some of the life blood has been drained away. In our view, we really need to inject back into universities that elusive but vital ingredient: a climate of intellectual inquiry.

CONCLUSION

Out of all this, one of the most interesting and somewhat salutary learning outcomes for us was that if we actually did what we already know to be good practice, our universities would be a lot further down the track in terms of developing lifelong learners. Many of you may have seen the HERDSA document 'Challenging Conceptions of Teaching.' It consists of 47 questions designed for individual academics, groups of academics, teaching teams, maybe even whole departments, to spend a couple of hours reading through and talking about, as an aid to reflection on their practice. One of those questions asks: "what approaches do you use to help students reflect on their own learning intentions, behaviour and practice and to develop effective skills for lifelong learning?" That is question number 17. However, this whole document is really about enhancing students' learning experiences at university and beyond; it is reproduced in its entirety as an Appendix to our *Report*.

I have long had an interest in history and one of the things I did when I prepared the *Report* was to go back to the Inaugural Address for the University of Sydney, the oldest and arguably the most venerable university in Australia. The Inaugural Address was given in 1852 by Rev Dr John Woolley, foundation Principal and Professor of Logic and Classics. This is what he said:

Our undergraduates will.... we may reasonably hope, possess a well cultivated and vigorous understanding; they will have formed the habit of thinking at once with modesty and independence; they will not be in danger of mistaking one branch of science for the whole circle of knowledge; nor of unduly exaggerating the importance of the studies which they select as their own. Above all, they will have attained the truest and most useful result of human knowledge, the consciousness and confession of their comparative ignorance.

It seems to me that the acknowledgment of one's ignorance is actually the beginning of this lifelong journey of continuing learning, and that in a sense, by focusing on developing lifelong learners in undergraduate programs, universities are actually reaffirming their historic commitment to providing support in its many forms, contexts and manifestations throughout life.

In the United Kingdom major changes have been made in the higher education system in the hope of improving the nation's economic condition. New links have been made between education, employment and training at a governmental level. There has been increased emphasis on the ideas of 'quality', 'skills', 'enterprise', 'active', and 'life long learning', and 'a better educated workforce'.

The Enterprise in Higher Education (EHE) was a national initiative from the Employment Department to explore some of these ideas. It aimed to have sector wide impact and cause institution wide change and was to affect all students on all courses taught. There was to be a fundamental change in the curriculum in the areas of content, assessment, delivery and outcomes. The initiative was about developing 'enterprising students' who were:

- responsible, self managing learners;
- capable of working with others;
- committed to critical action and critical thinking; and
- had well founded generic skills.

These features were to be developed and assessed alongside the specialist understandings and skills of courses.

A senior academic was appointed to lead the initiative within an institution and that person became a member of key committees. After widespread briefings and debate a clear programme, with achievable targets and local ownership, was defined. The programme was aligned with existing procedures for quality assurance, course validation and review and staff, curriculum and educational development. Some of the programmes which developed as the vision became a reality were:

- more active approaches to student learning
- alternative modes of curriculum delivery
- a wide range of personal transferable skills
- more community based 'live' projects
- massive programme of academic staff development
- increased and stronger employer links to support the curriculum

It was found that as there is a change from a teacher-centred approach to a more student-centred approach to active learning the following are likely to occur:

- focus on process
- emphasis on knowing how
- students work in groups and teams, collectively and cooperatively
- students work independently
- objectives are negotiated
- assessment is varied
- students actively generate and synthesise knowledge
- teaching sessions are flexible and not always classroom-based
- teacher is a facilitator and a resource for students in a learning partnership

The personal transferable skills include;

- group work, leadership and team building skills;
- verbal and written communication skills;
- critical thinking, problem solving and decision making skills;
- data handling and presentation skills;
- self-development , self-presentation and interpersonal skills;
- organisation and project management skills;
- computer literacy and skills in the application of information technology;
- influencing, negotiation and advocacy skills; and
- foreign language skills.

According to Noel Entwistle (1994) "Skills are the prerequisite of putting thought into action". There was some debate among academic staff about whether these skills should be 'taught' in higher education and, if they were, whether they should be included as part of the existing course and assessed.

As part of the EHE initiative, students were involved in 'live' projects. These projects provided an opportunity for the students to apply their knowledge in a real setting, develop personal and transferable skills and deliver a product or service to a specified brief. Some examples of 'live' projects were:

- Personnel students worked with a team of young employees from a large company that wished to develop a new induction programme for recruits
- Design students were commissioned to design the reception area of the Municipal Centre
- Computing students designed a new payroll system for use by a medium sized employer

Some of the issues raised during the live projects included:

- operation across organisational boundaries;
- complex negotiation processes;
- joint tutoring and assessment;
- over stimulating the environment - success breeds an avalanche of requests; and
- interdisciplinary.

In terms of the curriculum EHE has achieved:

- greater emphasis on the teaching-learning process;
- less didactic styles of teaching;
- greater range of assessment methods;
- development and assessment of generic skills;
- assessment and credit for off campus learning;
- more independent learning (low tech and high tech);
- increased volume and range of employer support;
- more community involvement;
- integrated study skills;
- integrated careers education; and greater use of portfolios, profiles and RoAs.

GIVING AWAY THE MARKS...OR TAKING THE ASS OUT OF ASSESSMENT

NOTE TO READERS

The following set of instructions for running a workshop on assessment is offered in the hope of stimulating similar (or even different!) sessions by other practitioners and staff developers. The only way we can make a general improvement in the way that we assess our students is to unpack and challenge and rethink our founding assumptions. If you do use my approach, or a variant of it, I would be interested to hear from you about what your group came up with!

INTRODUCTION

Ever wondered at the end of a semester, after all those essays and exams have rolled in, just what exactly you are doing with all the marks collected? How do you reconcile your general policy on assessment with all those special cases you deal with? Are you objectively assessing the academic worth of students? Are you grading the ability of each person relative to other students in the class? To the improvement each student has made? To the standards of classes in other years? To the standards of classes elsewhere in the department / university? How many of your students fail? Are you just following academic routine and not really worrying? Maybe we should just give the marks away. By this I mean two things: firstly, perhaps assessment is no longer valid or appropriate, given the teaching approaches which more and more of us are using. In this sense we should just give away marking altogether and think through a new process of bringing each semester to a close! But I also mean - perhaps a little more seriously - that maybe marks should not be distributed according to criteria of ability, but of effort; that is, students who work the hardest at their learning should do better than those who cruise through. With this in mind, basically it is over to you! I will facilitate, but I would ask that your work be driven by your own experiences and approaches and that you learn from one another.

Program (see over for more details)

- Why are we here:* roundtable introductions of participants, plus discussion of why we are at this workshop and our experiences of assessment [10 minutes]
2. *Setting the norm of assessment:* small group discussions of 'normal' assessment - sources, methods, aims and outcomes [15 minutes]
 3. *Radical departures:* continue in small groups to come up with new methods of assessment which are radically different from the 'normal' - how to do it, why, will it work, problems of implementation [20 minutes]
 4. *Sharing ideas:* plenary to share ideas from small group work [15 minutes]

At the end

You will find a two page description of my own innovative approach, in which I 'give away' the marks - rewarding effort more than performance and encouraging independent learning.

WHY ARE WE HERE

Roundtable introductions, in which we introduce ourselves and briefly speak about why we are at this workshop. We'll do this as quickly as possible, but with due regard to the need to establish the numerous agendas and assumptions which people bring with them to such discussions.

SETTING THE NORM OF ASSESSMENT

We need to have some ideas about why we assess students in the way we do. This is not simply a matter of discussing what methods to use - though that is usually the level of discussion in which academics engage. Rather, we need to explore *where* assessment as we understand it comes from; *why* it works as it does; *how* methods fit with these sources and aims; and consider what's *right* and *wrong* about assessment. At this stage, I want you to discuss a hypothetical 'normal' assessment (very difficult, I know) - rely on your experiences, but try to establish some picture of the *dominant* ideas of assessment are in the Australian (world?) university system. In small groups, please discuss the following questions - you may concentrate on one or other, or look at all of them, or rephrase them as suits you. There's no need to report on your discussion, since it is a preliminary stage for the main discussion [see below], but you may like to take notes for the next activity

What are the aims of assessment?

What methods do we use?

Where do these methods and aims come from?

What are the strengths and weaknesses of them (in various contexts...)?

RADICAL DEPARTURES

It may be that you are quite happy with assessment as we have conceived it in the above exercise - but I am assuming that your participation in this workshop is dependent on a desire to do something *different* - perhaps radically different. I would like you to discuss, in the same small groups, some aspect of assessment that you believe needs a radical overall (it can be the whole system, or the way essays are marked, or the balance between continuous assessment / exams - please take assessment in its broadest context) and, after discussion, to present a brief statement to the other groups outlining your *rationale*, your *methods* and your *intended outcomes*. Briefly explore what resistance / difficulties of a practical nature would be encountered in implementing it.

How to proceed

You may like to start simply by brainstorming things you do already, want to do, have read about - then, after five minutes, find a consensus and write it up for the other groups, using OH slides, butchers paper etc.

Try being bold and provocative! Assessment reforms seem to me to suffer from a tendency towards incremental changes, and modifications which miss the opportunity for a really radical alternative.

If you don't want to be radical, and maybe even like 'normal' assessment - present a defence of current practices, or indicate the problems of being too radical in making changes.

Keep in mind the need to present a rationale for the change - "aims and outcomes"; and, in particular, note problems - ie not enough time, too few resources - these practical issues need to be addressed.

A LEARNING JOURNAL FOR LOGIC AND REASONING

A RADICAL APPROACH TO ASSESSMENT

Description

In 1994, the School of Social Sciences and Asian Languages (SSAL) offered for the first time a new unit on critical thinking, called Logic and Reasoning 200. It was designed to meet two objectives. Firstly, SSAL had agreed to a request by the School of Accounting that it provide a unit which students studying accounting could take to improve their general analytical and reasoning skills. The School of Accounting had formed the view that such a unit would be allow direct enhancement of the skills being developed within its own offerings to meet the needs of the profession. Secondly, SSAL offered the unit to all students in the university, and especially its own, so as to provide them with a similar opportunity to build more directly on the basic development of reasoning skills which tertiary study fosters indirectly.

The pedagogic approach was one of active learning, with a heavy emphasis on independent activity by the students. The nature of critical thinking is such that it cannot be learnt by rote memorisation, nor by student reading and discussion (though this activity is important for understanding the finer details). The main learning activity is in doing practice exercises and problems and then checking the answers and doing some more! Because of the opportunity offered by a new unit and the particular nature of the curriculum, Logic and Reasoning took a highly innovative approach, both to its subject matter and, especially, to its learning style.

The main innovation was in assessment. In first semester, 50% (rising to 70% in second semester) of the assessment was based on the work (short exercises, taking notes etc) students did **week by week** in preparation for tutorials, in review of lectures and in completing each topic. This assessment was concerned not **what** students were learning (which assessed via an essay - only in first semester - and exam). Instead, marks were awarded on the basis of **how** students were learning: were they doing the work effectively? were they self-checking their answers? were they finding extra materials to supplement those provided? were they conscientiously working week-by-week? were they being innovative themselves (ie writing summaries of tutorials)? were they being 'scrappy' in their approach - ie taking a do the minimum possible approach - or were they trying to work with the unit to extend themselves?

This work was collected, week by week, in a large ring-binder called the 'Learning Journal'. It was not a reflective journal, but more of a workbook with some elements of reflective commentary. Students were able to obtain up to a grade of 65% for the learning journal simply by completing compulsory exercises (such as "do these problems", "take notes from the text book, chapter 1"); the actual answers were **not** assessed, but rather the effort put in - in this sense a correct answer without explanation was seen as worse than a wrong answer in which the student had made an effort to explore the concepts involved. Discrimination between students was based on the effort put in and not on the right or wrong answers. A higher mark came from completion of extra work - either as suggested by the teachers or (and this scored highest marks) on their own initiative.

Some Problems

There were some problems! The amount of work which students produced was staggering and made it impossible to review all of it in detail. Teachers in the unit took a sampling approach which seemed to work fine in terms of grading (some journals were subjected to more detailed analysis after initial grading and the initial grade was confirmed); however some students were less than happy with the amount of feedback they received. What's interesting is that, in actually submitting work (such as lecture notes, tute summaries, self-directed exercises) which would not normally be looked at by a lecturer (and thus be given no feedback), their expectations were raised such that they assumed they

would get as much feedback as on, say, an essay. Teachers generally considered that the time taken to mark the work over the whole semester was about the same as for more traditional forms of assessment (particularly when the essay was removed from the list of assessment in second semester), but there were considerable administrative problems in collecting and returning 200 large ring binders.

Feedback problems were addressed to some extent through the distribution of answer sheets but, again, students often failed to follow through as independent learners and check their own work. Those students who did were rewarded with extra marks. In 1995, tutorials will be more directly linked to the journal exercises, ensuring that problems can be looked at in detail after students have attempted them.

Another problem was that some students simply could not cope with being told to think of things to do for themselves, even when shown examples of what extra work they might do. My conclusion is that the Learning Journal is so different from other forms of assessment that they could adjust their mindsets to the new challenge. Nevertheless, it was heartening that many students (including Asian students who are 'notoriously' 'poor' independent learners) did adjust and produced outstanding work.

But there were advantages

There were many advantages. Firstly, it was gratifying to see just how hard students work and to be able to reward them directly for their efforts. Some went to extraordinary lengths, learning much along the way (and there was no need for the teachers to 'check' this - simply by doing the work they learned something). They also provided materials which have been used in later semesters - little examples, cuttings from newspapers, references to other books on reasoning, articles on why students should study reasoning. Looking directly at what students wrote in their lecture notes was also revealing (!)

The journal was also a very good way of organising a wide variety of activities into a single, coherent, continuous whole, easing students' worries about what they had to do and when. Students also appreciated the continuous assessment approach, which took the pressure off them at exam time. While they may have wanted more feedback, they did receive more than if they were assessed through large, end-of-semester exams. The main advantage was that students who worked hard and *tried*, did receive good marks. In both semesters, the marks in the final exam corresponded closely with the journal marks. Only in the case of students studying off-shore in Hong Kong did the journal not serve as an accurate predictor of success. This can be put down to language problems and the different marking approach of the teacher in Hong Kong.

Overall, the judgement of the four teachers involved in the unit was positive - and the students, in confidential questionnaires also gave a big thumbs up to the Learning Journal.

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VALUING TEACHING & LEARNING IN A UNIVERSITY: DIFFERING ACADEMIC STAFF PERCEPTIONS

ABSTRACT

This paper reports the findings which have emerged from a mail survey and follow-up interview of almost 400 academics who represent 42% of the full-time staff at a major university. A comprehensive questionnaire containing almost 200 items was used to investigate the relationship between teaching and research, publications, staff selection/induction/promotion and student learning and the value placed on teaching and learning by various groups or levels within the university. Results revealed significant differences in the perceived value placed on teaching and research by university administration, school/department, and individual academic staff. Indeed significant differences in perception were apparent across professional and teaching qualifications, gender, teaching service, academic position and status, and faculty affiliation. A 'greater recognition of teaching' was the most frequent comment staff made about ways to improve the quality of teaching at the university. The most frequent comment by staff, about ways to improve their own teaching, related to a desire to improve their repertoire of teaching skills and processes. There was also a desire for using new teaching technologies and audio-visual aids; updating current knowledge base; and learning about different assessment strategies. A substantial number of academics referred to the need for more academics to gain qualifications, or training, in teaching and learning processes. These findings have wide implication for academic staff development programs and the actions of universities responding to recent moves toward quality assurance and the advancement of quality teaching and learning in universities.

INTRODUCTION

This paper reports findings from a study commissioned to investigate the perceptions of teaching and learning held by academic staff in a large Australian University. The specific brief given for this study was to survey academic staff in the university and report on: how they value teaching in the university, particularly in relation to other aspects of academic life ie., administration, research and publishing; the attitudes they hold about teaching and teaching processes in the university; their perceptions of the importance and place of teaching in the university. While the study reported in this paper has covered a broad range of issues that may be related to teaching (e.g., research, publications, promotion, administrative policy etc), the paper focuses mainly on how different sectors within the university value teaching, how academics rate themselves on various aspects of teaching, and how academic staff perceive the quality of teaching and learning may be improved within the university. A full report of the study is contained in Valuing Teaching and Learning: Academic Staff Perceptions (Baker, 1994).

Recent moves toward quality assurance and the advent of federal grants to advance the quality of teaching and learning in higher education has rekindled interest in restoring a balance between teaching and research in Australian universities. In introducing a qualitative study based on interviewing lecturers about academic work in universities, Neumann (1993) reported finding 64 documents on the topic, 33 of which referred to the nexus between university teaching and research, however 'a few only' endeavoured to explain this relationship and explore the concepts further. Many large surveys investigating university teaching and academic work have been conducted overseas

since the late 1960's, however, it is only since the latter part of the 1980s that much has been done in Australia (Neumann,1993).

METHOD

The conceptual framework which emerged and guided the development of the survey instrument was derived from: a) an analytically based definition of what is teaching, b) literature outlining what it is that teachers do, c) a model of the study of teaching well established for use in educational research, d) current documents used by universities as guidelines for quality teaching in universities (eg., AV-CC Guidelines for Effective University Teaching, HERDSA Checklist for effective teaching), and e) academic staff and stakeholders with a special interest in the project.

Preliminary interviews were held with academic staff who were considered stakeholders and who held a special interest in the project. These interviews, together with current literature on quality teaching in universities, were instrumental in defining the scope of the survey instrument and the issues to be investigated. The final version of the questionnaire consisted of fixed format items (mostly Likert Scale), rating scales, and open ended items. Considering the comprehensiveness of the instrument a return rate of 42% (N=368) was considered to be a reasonable result (eg., the previous response rate of a 1992 survey of all academic staff at this university was 37%).

Sample

The demographic characteristics of the respondents (Table 1) indicate their representativeness as a sample of the total academic population of the university. Based on the institutional data available (ie., sex, position, status, years of service, etc) the sample profile appeared to be reasonably representative of the overall university academic population profile. Most of the sample report being heavily involved with teaching duties. Six classes per week was the most frequently reported 'class loading' with more than 75% of the respondents teaching between 3 and 6 classes each week. In contrast, almost 75% reported little or no hours (0-3 hours) officially allocated for research with approximately 20% allotted between 4-9 hours (mode=4 hours). Almost one-third of the respondents reported teaching first year students, and almost one-half teaching post-graduate students. Staff reported that teaching post graduate students increases the opportunities to become involved in research and publications whereas teaching undergraduates reduces these opportunities.

VALUING TEACHING AND RESEARCH

The key findings of the study were that while staff felt both research and teaching were important they consistently rated teaching more important; however, they perceived the current institutional values and rewards were heavily weighted toward research to the detriment of teaching at the university. The phrase 'lip service only' was most frequently used in the staff's written responses to how teaching was valued at the university level.

When academic staff were grouped according to teaching qualifications, professional qualifications, gender, teaching service, academic position and status, and academic affiliation, significant differences in perception were apparent across most of these groupings. A major one of these differences occurred between academic staff with teaching qualifications (35% of the sample) and their non-qualified colleagues. Qualified teachers rated significantly higher their ability to develop all key aspects of the teaching/learning processes and the quality of their teaching in terms of their teaching skills, and the variety of different teaching methods and learning activities they used. The more highly qualified staff were more likely to a) agree with the university's promotional system, b) believe that sufficient recognition was given to teaching, and c) value research more highly. There were significant differences between the way male and female academic staff members valued teaching and in the way they perceived some aspects of teaching were valued at the university.

More males agreed that sufficient weight was given to teaching excellence in the promotional system, more females were likely to use student evaluations and formal feedback in their teaching and more of them rated highly the importance of using a variety of student learning activities and teaching methods. The longer their length of service at the university the more that staff were likely to feel the university a) did not value teaching highly, and b) placed too much value on research and publishing. Similarly, the higher the promotional position of staff the more they valued research, the more they felt the university valued research and the more they felt the promotional system was appropriate. In terms of their teaching development, staff in their first years of service (1-5 yrs) rated significantly lower the quality of their teaching; however, the more likely they were to use student evaluations and formal feedback procedure.

The majority of academic staff felt there were more effective ways to teach than the lecture/tutorial mode and an almost unanimous number stressed the importance of small lab/workshops for skills development. Most staff supported continuous assessment and did not think final exams were a most effective means for assessing student learning; however, this view varied widely across different academic areas at the university, particularly in the areas of engineering, science and business. Staff strongly valued student learning and the importance of undergraduate teaching. The majority of staff reported regularly using formal student evaluations of their teaching; however, this varied widely across different groups with significantly less use by high status, senior male academics.

Academic staff felt their strengths were in a) the personal attributes they brought to their teaching (eg., enthusiasm, personality, being interesting, inspiring, humorous, etc), b) their subject knowledge and experiences, c) their teaching skills and processes, and d) their rapport with students. The most frequent comment concerned with the improvement of teaching related to a desire to improve teaching skills and processes (eg., presentation skills, alternative teaching methods, different learning activities, etc). Other areas highlighted by these comments were a desire for using new teaching technologies and audio-visual aids, updating current knowledge base, and learning about different assessment strategies.

Staff strongly voiced their concerns about the way support for teaching was not perceived to be forthcoming at the institutional level; this was particularly apparent in terms of 'the allocation of resources for teaching'; and the 'visible public actions' of the university toward teaching. There was a similarly strong feeling that over recent years there has been a tendency for more resources to move to non-teaching areas. These views were reasonably consistent across all academic positions; indeed, the more senior the status of staff the more support there was for the view that scarce resources were being moved into non-teaching areas. The biggest differences in this set of attitudinal scales occurred in staff perceptions of how university action supported the dissemination of information about research and development but failed to do so at the same level for teaching. The most frequently written comments by staff supporting these attitudinal scales referred to the positive role of the academic staff development group as a source of information.

The most frequent comments staff made about the ways to improve the quality of teaching at the university related to a greater recognition of teaching. A related group of comments referred to the ease of measuring research performance (eg., counting publications) against the difficulty of measuring teaching excellence. They felt the situation would improve if there were more recognition and rewards for teaching excellence at the institutional level and less emphasis on research. Associated with this 'recognition of teaching' was the expressed desire for more time and resources to be devoted to teaching, and generally, more staff and less students. More than half the academic staff reported they had participated in a teaching development activity over the last 12 months. Most of this was as a result of involvement in the academic staff development centre activities, however, a number were a result of individual pursuits. A substantial group of comments referred to the need for more academics to gain qualifications or training in teaching and learning processes.

CONCLUSION

It appears, from this study, that university teachers who have some qualification in teaching have a significantly higher opinion of their teaching competence and ability to impact on student learning than do non-qualified teachers. Academic staff possessing teaching qualifications rated significantly more highly their own teaching skills and the importance of, and their use of, a variety of teaching and learning activities. This notion of self efficacy among successful university teachers has been posited by others in recently reported studies in Australia. Dunkin and Precians (1993) recently reported a study which revealed significant differences between 12 award winning university teachers and other teachers in terms of self-rated competence in teaching. The study investigated the 'conceptual repertoire' of academics (the variety of teaching models available for use), 'self efficacy', and attitude to student feedback. Award winning teachers rated themselves significantly higher in maintaining student attention, arousing student enthusiasm, eliciting worthwhile discussions with students, and giving students helpful feedback. However, Pitney and O'Neill (1993) also studied ten award winning teachers in a large university and discovered only one had previous training in teaching. This study however, highlighted the importance of a reflective teaching process in the teacher development of university teachers.

Greater recognition of teaching excellence has been a strong recommendation from the academics participating in this study. In an attempt to meet some of these recommendations and in the face of increasing interest in quality university teaching, the university has since introduced and supported interested staff toward a Graduate Certificate in Education (University Teaching) to enable them to upgrade their knowledge and skills in teaching/learning processes and practices. Beginning university teachers, at least those without a teaching qualification, will be expected to participate in the program. When beginning teachers and even committed experienced teachers, *hear* that teaching is important but *see* the rewards go to research and publishing then teaching is bound to be neglected and the recipients, the students, the programs, and educational quality suffer.

Teaching portfolios are a less formal way than graduate certificates to promote teaching development and are becoming popular in North American universities. The use of teaching portfolios to promote and help reward quality teaching, in addition to the teaching certificate, also seems likely to be adopted by the university in this study. Using teaching portfolios has been a growing trend in Canada and the US. Zubizarreta (1994) cites the work of Seldin (1993) to report this extraordinary growth. In 1991 only 75 institutions in the US were using teaching portfolios to develop, monitor, and reward the teaching excellence of academics. Two years later in 1993, the number had increased to over 400 universities. In Canada the system has been used successfully for almost 20 years where Dalhousie University has been recognised as having a model portfolio program. Typically, portfolios contain a lecturer's account of his or her teaching beliefs and practices, goals for teaching, past and present teaching responsibilities, descriptions of course materials, student learning data, student and peer evaluations, and records of professional development activity. "The portfolio emerges as a crucial facet in the process of revaluing teaching in a system that has long reserved its rewards primarily for research." (Zubizarreta, 1994). The process may go some way towards counteracting what academic staff see as the poor promotional practice of simply counting publications. Whether graduate certificates, portfolios and grant monies can overcome entrenched value systems and bring about a change in current university attitudes and practices remains to be seen. At least the raw material, the strong nucleus of a committed teaching staff, is present and ready to respond to support at the institutional level.

In an address to university administrators, Vice Chancellor Robert Smith reported on the inappropriate paradigms operating in Australian universities:

"The present situation is a clash of paradigms: the internal, discipline - centred paradigm against the one held by society at large, in which the legitimacy of research is conceded only to the extent that it supports and enriches the teaching of undergraduates." Smith (1992)

Smith reported the work of Pannabaker (1992) in Canada who sees Canadian universities as also employing a discipline-centred paradigm. Pannabaker believes this paradigm is only appropriate in times of economic prosperity and growth. The paradigm, according to the Canadian critic, 'defines scholarship too narrowly -- because peer reviewed publications are easiest to measure -- and allow five to ten years to training academics as researchers, a few weeks of training, at best, in pedagogy and none in administration and management'. If the dominant discipline-centred paradigm in our universities is to move more toward the paradigm supported by the society at large, then attitudes will need to change suggests Smith. Two preconditions he posits for this change are developing an understanding to the organisational culture of universities and understanding what is involved in effective leadership, management and administration of that organisation.

Based on the findings from this survey of academic staff, the seeds of change are there but unless the rewards for excellence in teaching move more into line with those for research and peer reviewed publications, there seems little hope of a paradigm shift occurring. CAUT grants and Quality Audit rewards for excellence in teaching and learning, appear to be making some progress in this direction, however, even the most optimistic of concerned academics would see little chance of this lasting more than a year or two in current circumstances, with even less chance of it becoming an established part of university organisational culture when the dollar incentives disappear.

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TABLES

Academic Staff		(N = 368 -- 42% of the population)	
		Sample	Population
Sex	Male	62%	66%
	Female	38%	34%
Position:	Assoc. Lecturer	16%	17%
	Lecturer	45%	44%
	Senior Lecturer	24%	23%
	Assoc. Professor	10%	11%
	Professor	5%	5%
Status:	F/T Tenured	65%	63%
	Non-Tenured	35%	37%
Yrs at university	First Year	10%	12%
	2 - 5 yrs	33%	23%
	6 - 10 yrs	22%	31%
	11 - 15 yrs	13%	13%
	16 + yrs	22%	21%
Academic disciplines	Arts	31%	26%
	Business	16%	17%
	Science	17%	22%
	Health Services	30%	26%
	Others	7%	9%
School/college teaching (eg., primary, secondary, college level)			
Approximately 50% previously taught at school/college level.			
Teaching qualification	Yes	35%	
	No	65%	
Highest level qualif.	Bachelor	15%	
	Grad Diploma	18%	
	Masters	32%	
	Doctorate	33%	
	Other	2%	

TABLE 1. Survey Sample: Demographic Characteristics Profile

Currently valued by		Teaching (SD)		Research (SD)	
a)	the university	4.6	(2.3)	8.7	(1.5)
b)	their school/dept	6.0	(2.5)	7.7	(2.0)
c)	themselves	8.6	(1.4)	7.2	(2.2)
Ideally valued by		Teaching (SD)		Research (SD)	
a)	the university	8.8	(1.4)	8.2	(1.7)
b)	their school/dept	8.8	(1.4)	8.1	(1.7)
c)	themselves	8.8	(1.4)	8.0	(1.9)

[Ten point scale (1=low... 10=high)]

TABLE 2. Mean Staff Perceptions of How Teaching and Research are Valued

This university shows it values teaching by:		Mean
a)	the way it supports its students (25% agreement, 35% disagreement)	2.9
b)	the way it supports its teaching staff (23% agreement, 54% disagreement)	2.6
c)	the way it ensures good teaching facilities (28% agreement, 52% disagreement)	2.6
d)	the way it ensures good library resources (58% agreement, 22% disagreement)	3.4
e)	the way it ensures sufficient time for good teaching (20% agreement, 56% disagreement)	2.5
f)	its written mission statements (33% agreement, 19% disagreement)	3.1
g)	its visible public actions (17% agreement, 41% disagreement)	2.6
h)	the way it allocates its resources (13% agreement, 63% disagreement)	2.3

TABLE 3. University Valuing of Aspects of Teaching (5pt Likert Scale)

Teaching Practices	Mean	SD
Written feedback assignments within a week	7.5	2.1
Giving marking key in advance	7.5	2.4
Using a variety of teaching methods	8.2	1.7
Using a variety of teaching materials	8.2	1.6
Using a variety of learning activities	8.3	1.7
Using a variety of assessment methods	7.9	2.0

TABLE 4: Importance of Teaching Practices (10 pt scale 1=low 10=high)

Adequacy of training in teaching practices:	
Disagreed+Unsure	
to evaluate good teaching practice	(36%)
to develop a course curriculum	(30%)
to develop a variety of assessment methods	(30%)
to develop a variety of good teaching methods	(30%)

TABLE 5: Staff Unsure/Disagreed About Adequacy of Training in Teaching Practices

Variables	Qualif.Tchrs	Non-Qualif.Tchrs (Frequency rounded to approx. %)	Signif.
1. Use Student Evaluations	75%	55%	p< .000
2. Lecture/tutorial disagree	70%	55%	p< .002
3. Final Exams disagree	75%	60%	p< .011
4. Importance of Variety			
a) teaching methods	86%	68%	p< .001
b) learning activities	85%	70%	p< .010
5. Adequacy of Training			
a) course curriculum	85%	60%	p< .000
b) learning activities	88%	60%	p< .000
c) assess methods	80%	62%	p< .000
d) teaching methods	88%	60%	p< .000
e) eval. teaching	85%	50%	p< .000
f) to be a good teacher	92%	64%	p< .000
6. Quality of Teaching in			
a) skills	83%	63%	p< .000
b) teaching methods	62%	40%	p< .000
c) learning activities	60%	42%	p< .000

TABLE 6. Qualified Teachers & Valuing Teaching

Variables	Low Qualif.	Hi Qualif.	Significance (Frequency rounded to approx. %)
1. Valuing Teaching/Research			
a) University Value T.	5%	20%	p<.009
b) You Value R.	40%	66%	p<.001
c) You Value T.	90%	75%	p<.050
d) Research Benefits T.	75%	90%	p<.003
2. Promotional System			
a) Proper balance of Criteria	5%	22%	p<.000
b) Teaching Rewarded	5%	15%	p<.005
c) Proper Weight:Tenure	8%	28%	p<.006
d) Proper Weight:Promotion	10%	22%	p<.000
3. Adequacy of Training for:			
a) Curriculum Development	60%	80%	p<.000
b) Assessment Methods	65%	75%	p<.002
c) Learning Activities	66%	72%	p<.020
4. Quality of Teaching			
Knowledge Prep. for T.	80%	92%	p<.030

TABLE 7. Professional Qualifications and Valuing Teaching

THE COMPETENCE APPROACH: CONSTRICTING DEVELOPMENT OR THE FREEDOM TO LEARN?

ABSTRACT

This paper argues that there are many elements of the competence based approach to learning that Higher Education, which focuses upon student thinking and learning skills, might benefit from reviewing and incorporating.

The current withdrawal and resistance to the competence approach has been largely based upon the perceived restraints that it would introduce to both institutional control and student learning direction and flexibility.

This paper suggests that on the contrary, there are many effective learning principles within the competence approach from which Higher Education could benefit from incorporating, in recognition of the fact that this approach is destined to be the dominant educational and learner perspective. Rather than opposing the movement, Higher Education needs to focus upon the adaptation of the diverse educational philosophies which the approach encompasses, in order to enrich the current higher education experience, specifically in the area of cognitive strategy development.

It is specifically the changes in the assessment structure which have the capacity to develop more student centred reflective learning. The establishment of clear outcomes should be seen as not a limiting and constricting framework, but a motivating target which allows the learner freedom to learn. There is in fact a compatibility in terms of philosophical stance between the true aims of Higher education and the competence approach.

The challenge for HE is to utilise the benefits of such an approach in a structure that can facilitate more effective student learning. This approach might incorporate many of the major elements of the competence approach but could be viewed more as outcome based development. Here the outcomes would specifically focus on cognitive development as well as content replication. Such a system might provide a more effective learning experience for students and a more rational articulation to the surrounding educational and development environment.

INTRODUCTION - *The quest for the Higher Education Grail.....*

When I question myself about what might be better in a unit, I am inevitably asking myself how I can facilitate more effective student thinking and learning skills (Flannery 1993). But all too often the aspirations that existed in curriculum development are somehow lost within the reality of delivery. The content seems to dominate the process. The aspirations of developing thinking can become secondary or even incidental to securing content and institutional requirements (Clarke, 1986). There appears in the end to be more rhetoric concerning developing student thinking than substance.

While some learners may question continually, many actually accelerate the emphasis on content by demanding facts, concrete answers and "off the shelf" strategies for future situations. Where we concede to their demands, many will develop only limited learning skills and continue to be largely analytically and critically unaware. The proposal of this paper is that the competence based approach,

far from restricting student learning, offers an agenda for development towards such *real learning* (Biggs, 1991).

Currently the government is placing considerable resources (Keating, 1992) at the disposal of the vocational and educational and training sector (VET) to restructure towards a competence based agenda and meet the deficiencies that they perceive exist between the system and future national needs (Finn, 1991). There are similar pressures on Higher Education both to respond to related articulation issues and to be more precise in terms of outcomes (Guthrie, 1994).

There is no reason why such pressures should be viewed as cumulative and in addition to the perennial struggles to facilitate more effective learning. The proposal of this paper is that by taking a fresh look at the opportunities offered by a competence based approach some answers to both the need to clarify outcomes and the need to enhance the development of student cognitive strategies may be forthcoming. There must be a recognition that some incongruities do exist between the current national competence framework for Vocational Education and Training and the aims of the Higher Education system. However this paper takes the view that there are sufficient flaws in the current delivery of higher education to indicate that further examination of any system which might enhance real student learning should be pursued (Carmichael, 1993).

COMPETENCE IS NOT ENOUGH - *But it is not a bad place to start...*

Higher Education will shortly find itself at the peak of an educational pyramid which will be increasingly based in the competence approach (NOOSR, 1993, Sanders, 1994). There will be continued pressure upon higher education to embrace the competence based approach that is permeating all other segments of the educational and training system (AV-CC, 1994). Resistance to such incursions have been largely based upon the argument that a competence based system would constrain the learning horizons of higher education students and construct them through externally determined content, at the expense of learners developing their own critical abilities and cognitive skills. Many would criticise the competence approach because such an framework (Gale, 1994, Hedberg, 1993, Hayes, 1992);

Limits learning to stated outcomes and encourages mere reproduction rather than creative development.

- By only promoting competence devalues the search for excellence.
- By defining the outcomes attempts to construct learners by defining the learning process.
- Is all about skills and practical application, without conceptual and theoretical background.
- Limits student assessment to the observable.
- Is only applicable to lower order learning in the cognitive and psychomotor domains.
- Rests the power of curriculum definition from education to be handed over to industry.
- Ignores the other criteria that contribute to ultimate performance.

Upon further examination many of these arguments appear to be either unduly pessimistic or at least rather biased interpretations. Appropriate responses to each of those arguments might be as follows (Hager, 1994, Bowden & Master 1993);

With stated outcomes the learners are free to choose their own learning routes and assessment contexts.

- It is more realistic to aim for learning challenges that students may holistically obtain.
- With no defined curriculum the learners are free to explore the learning that is relevant to themselves.
- The majority of Higher Education courses are preparing learners for practice in employment.

- The approach recognises underpinning knowledge and the ability to respond to contingencies.
- Cognitive apprenticeships can be effective in exploring practical examples in the affective domain.
- True power in education rests with expertise in assisting learning, not in controlling content.
- Education can only focus on individual learning and cannot directly develop external systems.

These perspectives might be accepted as a more valid interpretation but there still remains the underlying fear of being industry's lackey (Baumgart, Collins, 1992). This political concern is that the competence approach means handing over control of the curriculum. Institutions will be no more than supervising the mastication of boxes of learning defined and composed by others, where students are mere consumers of facts and generic strategies. However the contention of this paper is that the competence approach should not be seen as a system change to realign the focus on power with industry, but an opportunity to develop more relevant learning activity by overhauling the roots of a system that was devised to serve and deliver in a very different environment (Start, 1988).

THE ROOTS OF THE APPROACH - *Tracing the family tree...*

It is wrong for Higher Education to respond to a system primarily devised for the VET sector. As with any system, it is not just the basic structure of the competence approach that should be considered, but both the underlying educational philosophy and then the realities of implementation which deserve much closer inspection. First a search for the philosophy.

The competence approach should not simply be viewed as a national system as defined by the NTB (1992) in Australia or the NCVQ (1991) in the UK. It has its roots in the dissatisfaction that a number of writers felt with the current system in the sixties and seventies and their suggestions for structural development. Exploring the more recent literature to locate the germination of the competence approach is not an easy task as there is a poverty of academic justification but considerable government rhetoric (Duffy, 1992). Research would suggest that the following figures from diverse fields have been the most influential and have contributed the main thrusts of the competence approach. They produced the four main components that interlink to provide the conceptual development of the competence approach currently in implementation.

FIELD	AUTHOR	ISSUE	RATIONALE
Educational Psychology	Carroll (1963)	Mastery Learning	Emphasised the need for individual learning programmes not fixed to time periods
Instructional Design	Mager (1975)	Behavioural Objectives	Founded the basis of vocational educational programmes being tied to workplace outcomes
Assessment	Glaser (1963)	Criterion Referencing	Consolidated an alternative approach to the existing norm referenced assessment process
Social Development	Tofler (1971) Illich (1971)	Lifelong Learning	Proposed that the response to post industrial Ed. needs was a flexible one which replaced front end loading by continual learning

The competence approach is therefore based upon a diverse and complex conceptual framework.. Governments have drawn these components together to form prescribed competence based educational systems (NTB, 1992). However there is no reason why these underlying components could not be examined and reinterpreted in a framework more suitable for the educational aims of Higher Education.

THE REALITY OF CONFLICTING MODELS - *Building in real learning....*

Second, having looked at the roots of the approach, it is important to examine the variation that has occurred in implementation. Often what we propose and then design looks very different in delivery, stranger still to the participants, and possibly dysfunctional after we have evaluated the outcome. How does the competence model built upon the previously detailed principles look in practice? There are evidently some sound educational concepts in the underlying conceptual framework of the approach but there still exists scepticism with the way such concepts are being implemented. Perhaps this is one case for *shooting the piano player* and then refocussing on the original composition.

The government has proposed that the country requires skills for tomorrow and lifelong learners (Moran, 1993). Logically in an environment of rapid change that should equate to flexible learning skills and aligns with the traditional aims of Higher Education (Berryman, 1993, King 1993). How can a competence based approach deliver such goods? Let us examine what kind of learning benefits an approach based upon such principles and needs can bring to learner development. The change in the assessment process is at the heart of such a system (Jessup, 1991, Thompson, 1989, Knowles, 1983).

The stated outcomes of the competence approach provide visual *goals* for the learners giving motivation and security to the learning process.

The transparent and continuous nature of the assessment process promotes ownership by the learners and responsibility for evidence collection. As Winter (1989) has suggested they also seek to remove the educational glass ceiling by providing greater access for the culturally disadvantaged.

The individuality of each learners' needs is recognised in charting personal learning patterns towards the learning outcomes giving each learner *choice and responsibility*.

The continuous assessment and planning process provides the opportunity for reflective learning through the continual review of process and promoting the development of cognitive strategies.

The negotiation of assessment according to the learners' needs allows for individual learning differences.

The removal of competitive hindrances focuses the learners on the true learning struggle with the outcomes.

The focus on practical application provides motivation by connecting the learning to the real world.

So why has a system that offers such andragogical benefits not been embraced (Knowles 1990). There are two main obstacles. The first is that the approach is still erroneously viewed as rigid in structure and the second that the implications for institutional change are realistically daunting.

In the first case there may well currently be examples of those who have used such an approach to further mechanise their training control (Lange, 1993). These examples are a dysfunctional interpretation of the principles that we have reviewed. The more recent trend within several more enlightened practitioners within VET in WA is to focus upon learning skills within their competence approach. Their experience is that many students in fact need development in their learning skills to manage their own learning in the more open environment that is being offered to them through the competence approach (Weinstein, Goetz, Alexander, 1988).

In the second case real student focus and choice is not an easy option for institutions. Where handbooks have grown to include many hundred units, the prospect of controlling thousands of individual learning routes is not immediately appealing. Yet there must be the recognition that tackling such an issue is the challenge of the future. If not to promote more customer options from a business perspective, then to develop the learners' own self management abilities through learning responsibility.

The proposal is that while change towards such a competency approach is neither inevitable nor compulsory, improving the current system is necessary, and that these concepts provide a focus for such change.

OUTCOME BASED DEVELOPMENT - *A creative interpretation...*

Developing learning skills and the cognitive strategies of learners will equip them with the vital resources that they will need tomorrow. While a National competence based system designed for VET may be an incompatible instructional design for Higher Education, it does not provide a framework for change in higher education by providing rational underlying philosophies which could form the basis of a restructuring towards more outcome based development.

Here the outcomes would specifically focus on cognitive development as well as content replication. The outcomes would not be limited to defining just skills and content.

They would specifically encompass the abilities of students to *construct* and manage their own learning process and reflect upon that learning process (Jonassen, 1991, CTG-VU, 1991). Such outcomes could also specify the relationship and responsibilities of both the learner and tutor. Furthermore they would develop the ability of the learners to analyse the outcomes of the unit and become critically aware of the agenda that was being set for them and the underlying rationale of that agenda. *Deconstruction* of their learning outcomes would become an integral learning activity (Yeaman, 1994). In addition the emphasis upon practical outcomes would necessitate a more *phenomenological* methodology for such a course structure.

Such an approach would not only demonstrate that Higher Education was listening to the needs of the professions and developing a congruent approach for articulation with the rest of the educational environment, but it would also be underpinned with the deepest concern to develop critical student thinking.

CONCLUSION

This paper does not intend to sell the competence based approach in terms of the current Australian national system. Rather it recommends that such an approach is based upon an epistemological framework which deserves further scrutiny and that may provide a methodology for achieving greater success in developing learners' cognitive strategies (Le Grand Brant, Farmer, Buckmaster, 1993). The central recommendation is that the core of the competence approach provides us with the appropriate paradigm for learner assessment (Buckle and Riding, 1988, TGAT, 1987, Torrence, 1992).

An outcome based development approach which recognises process goals might enable Higher Education to clarify what it wants to achieve and provide a more effective monitoring platform to see if it has been achieved. By developing the current system with consideration for the concepts inherent in the competence based approach there is the opportunity to produce greater self management and more reflective learning for the learners. This would provide a more fertile environment for the development of student cognitive strategies, their toolkit for the future.

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**SINGAPORIAN PERSPECTIVES: IMPLICATIONS FOR TERTIARY
TEACHING AND LEARNING**

ABSTRACT

This paper focuses on the second cycle of a two cycle piece of Action Research. The second cycle - a sociolinguistic study of Singapore English - designed as a response to a clear problem which had emerged from the first cycle - the continuing lack of access of some students of a non English speaking background to language/culture support at Curtin University. Singaporean students, in particular, had been denied access, partly because it was thought that, as they had been brought up in an English speaking country, their 'English' ability must be appropriate for study at an Australian university. The case studies revealed the difficulties faced by Singaporean students at an Australian university, including teaching/learning cultural differences and the revelations enabled the researcher to design and implement more equitable access mechanisms to language/culture support. Data from the study has also contributed to the development of a literacy policy for Curtin University.

INTRODUCTION

There has been some recognition by universities that academic courses and support services need to respond to the needs of migrant and international students who now comprise a significant component of the student body. In studies done by Rao (1976) and by Burns (1990) it was shown that more than half of the overseas students surveyed, mentioned problems associated with the English language, Australian slang and accent, speed of lecturers' delivery and difficulty in engaging in conversation.

This paper focuses on the second cycle of a two cycle piece of Action Research (Bell 1994) examining Singapore English and the implications for Singaporean students studying at an Australian University. According to the 1990 Census of Population Singapore, 36,179 Singaporeans were identified as working or living or studying overseas between 1986 and 1990. Of these, 15,300 were students. Australian educational institutions received 22% of this number (Straits Times, May 1992). It is clearly important to gain an understanding of Singaporeans' educational, cultural and social background in order to provide culturally unbiased, high quality service.

A literature review revealed that the English of Singapore has evolved to reflect facts such as social class, ethnic and national identity, peer group, and economic and occupational level; these factors account for the differences between Singapore English and Standard English and for the variations that exist within Singapore English.

ATTITUDES TO LEARNING ENGLISH

There is no doubt that attitudes to learning English influence language acquisition. An interesting study by Shaw (1981) revealed the attitudes of 170 Singaporeans to the learning of English. For example, 95% of the respondents said "I study English because I feel I will need it for work" and 90% of the respondents said "I study English because it is required in our system". Only 14% of the respondents said "I study English because it will help me to think and behave as native speakers do". When asked what variety of English is spoken by educated speakers in Singapore, 42.3% said "a variety unique to my country". As one would expect, English is not learned in order to study overseas and there has been little exposure to Australian English.

NON NATIVE ENGLISH LINGUISTIC DIFFERENCES

One of the main differences between Singapore English and Standard English is in pronunciation. Pronunciation has been neglected in Singaporean schools, according to Foley (1988), because teachers lack confidence in this area. Different English usage is another difference and is illustrated by the following examples found in the Straits Times of 5 and 8 July 1993.

'Man fined \$1,500 for molest.'

'A sales executive was fined \$1,500 for using criminal force to outrage the modesty of a 27-year-old woman.'

An Honours student talking about his lecturers in Singapore is quoted as saying:

"My friends and I used to gang up to see the lecturers about our problems as we were terrified of them. But now, we 'confront' them as friends."

LANGUAGE AND CULTURE

Many people in Singapore grow up speaking both Singapore English and Singapore Hokkien. 'Although bilingual these people are often not bicultural because their two languages code essentially the same culture, that of Singapore Chinese culture. Kuiper and Lin (1989) argue that the speaker of Singapore English is really speaking Hokkien with English-like words and syntax. They point out that the use of Singapore English outside Singapore creates problems, pointing out that formulaic knowledge is not purely linguistic; it is cultural.

Cultural studies are taught separately in Singaporean schools from language studies. The approach is thus, teaching about the culture so as to alleviate problems of communication in the language when the learner visits the foreign country. This, suggests Byram (1989) leads to a tourists' view of the culture and a selection of teaching materials accordingly. He says language and culture learning should be 'an integral contribution to the whole process which is prior to, simultaneous with, and subsequent to other components.'

CASE STUDIES

Case studies were undertaken with eight Singaporean students to reveal further insights relevant to Singaporean students' study at an Australian university. Case study one was carried out with three Singaporean students who had attended Polytechnics in Singapore and had, therefore, been given advanced standing on their University course. Case study two involved four first year Singaporean students and Case study three was with a Singaporean primary teacher who was studying Honours part time. Some of the students had done National Service and had not had to use Standard English for two and a half years.

Education in Singapore

All students, apart from one, attended English-medium schooling. They mentioned, however, although all subjects were taught in English, that emphasis was on content, and in Science, they only listed points. All reported that there was little, if any, oral work or reading in the English class. The primary teacher mentioned that debates were a treat to be indulged in after examinations. The students were used to a teaching centred style with board work. Cloze exercises were often used for grammar/vocabulary work. Recordings were used infrequently. Therefore, there was little exposure to English native speaker accents, idiomatic usage and certainly not to Australian English. Examination questions were answered in point form or short essay form of approximately 500 words. No report writing had been experienced. They said they were afraid to volunteer answers in case they

were wrong. All spoke English at school - in the case of the primary teacher who attended a good private school her name would have been recorded by a prefect if she had been caught speaking a dialect!

Culture Shock

All students felt they had not been prepared for the culture change. They found, for example, the casualness of students 'a little shocking' especially seeing students barefoot in the administration block. The culture shock experienced outside of university as well as on campus compounded their feeling of alienation. They felt self conscious and, whereas they were part of the majority culture in Singapore, they realised they had to get used to being a minority culture in Australia. They had also not been prepared for the number of assignments, nor the marking system which placed emphasis on tutorial participation. Feedback from assignments was often unhelpful as often they received grades without comments. Lecturers did not meet their expectations. This again may have been due to different cultural expectations. As Jean Brick stated in her research of 1993, Chinese teachers 'guided' students and 'built on solid foundations'. The students felt that many of our lecturers gave unstructured lectures and presumed background knowledge which they did not possess.

The students also found that their budget did not stretch to socialising. The budget and time restrictions prevented them from making Australian friends; they also found that Australian students tended to 'stick together'. One student commented "Aussies dislike Asians. They don't mix around with Asians even when Asians are willing to get to know them." The students mentioned that they would have been very interested in learning about Australian culture and in sharing their own culture with Australians.

Language difficulties

Handwriting of lecturers on boards was difficult to decipher and the students had expected handouts. They found the learning methods difficult - having to do substantial reading and research on their own adding that they had chosen courses where they felt they would not require a great knowledge of English. They had expected their English to be good enough for study in Australia and experienced quite a shock on finding they could not understand everything. In addition, they felt that Australian students made no allowances for the fact that English was not their native language. The Honours student, commenting on staff, said:

"I felt insulted when some tutors were not sensitive to my difficulties in spoken and written English. We may not be what they expected, but they have to understand that it took us lots of courage to make the decision to come here, especially when we're on our own."

The following writing sample also illustrates the concern with language.

"Language is the real problem. I'm actually worrying about. Especially in expressing my feeling, to describe a situation, or an occasion. Hopefully that, in Australia can provide me with an environment to learn, to improve my English."(sic)

It is interesting to note here that Rena Kelly's study (1993) showed that parents in Singapore did not consider that their children might have language difficulties when studying overseas.

The case studies revealed disappointment, frustration, even anger at the lack of prior knowledge about Australian language and culture (particularly Australian academic culture).

CONCLUSION

One can conclude that there is not, at present, enough dissemination of information regarding Australian language and culture, either on arrival, during first semester, or prior to students' departure. One would feel confident in hypothesising that other nationalities may be in as much need or even greater need of language/culture support given the non-English education system from which they come. It seems that institutions accepting overseas students need to address the problem of diversity in English and work out a policy which delineates what is and what is not acceptable English for academic study at an Australian university.

Various implementation steps were taken at Curtin University following recommendations from this study. Curtin's concern about the need for effective communication skills for all students (local and international) and the need to advise academic staff of the university's expectations in this area has now led to agreement for the adoption of a university-wide literacy policy.

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RESOURCES TO HELP LECTURERS DEVELOP THEIR TEACHING SKILLS: A COLLABORATIVE EFFORT FROM A LECTURER AND A LIBRARIAN

ABSTRACT

As part of the Curtin University's commitment to focus on the development of excellence in teaching and learning, each Division, Branch, School and Area responded in different ways. This year's Quality Portfolio was focused specifically on Teaching and Learning programs, many which were initiated or co-ordinated by the Teaching Learning Group. One program was to adopt a devolved model of staff development in which a lecturer in each teaching division was given time release to support fellow colleagues in their professional self development activities. An outreach approach to the provision of relevant library services to client groups was adopted by the Library and Information Services in 1993. As a result the Division of Arts Education and Social Sciences was able to have the services of a Senior Librarian, and an "Associate" Staff Developer. When the two people concerned compared their respective roles and discussed the perceived needs of their clients within the Division, they decided to collaborate and eventually combined their skills for a joint project.

INTRODUCTION

At Curtin University the responses to the Quality Movement have taken many forms. Each area within the University has developed goals or "vision" statements and strategic plans to improve the quality of all aspects of teaching and learning activities. Because of the size of the University and the devolved nature of its management structures, it is unusual for people in one area to be aware of the procedures and plans of another group. In the Division of Arts, Education and Social Sciences, (DAESS), however, group isolation is being overcome to some extent. This paper outlines how two people independently appointed from different organisational sections of the University decided to join forces to help fulfil the goals of the University.

THE ADVENTURES OF A LECTURER WHO BECAME AN ASSOCIATE STAFF DEVELOPER:

Background

Professional development activities for the academics at Curtin are coordinated by the Teaching Learning Group (TLG). Within this group, responsibility for academic staff development was, until recently, the responsibility of four people. Since 1994 however, TLG initiated an innovative scheme to harness the energies of more people by deciding to adopt a "devolved" model of staff development and employ associates.

Each teaching area chose a lecturer to act in a liaison capacity between their fellow lecturers and the staff development team. Not one of these associate staff developers had any previous background in staff development, and no training was given. However, the "associates" did meet once a week with the staff developers from TLG for discussion. The roles of each associate were not defined because it

was acknowledged that each teaching area had different subject specific needs, strategies and resources. Each associate was given an open brief to assess the needs of fellows lecturers, feed the information to the TLG and, where appropriate, either show support personally or seek help from specific staff in the TLG with the required expertise.

The Initial Strategy of the Associate

The general aim of the Academic Staff Development Associates Scheme was to be “responsive to specific discipline based needs within the Division” (Curtin University Quality Portfolio, 1994) The question was, how could one part-time person fulfil this goal? Yvonne used the Induction Program as a starting point to make friends with as many new staff as possible from each of the teaching areas. As an initial strategy the role was seen in terms of marketing. It seemed sensible to conduct market research to assess the needs of “clients”, then “advertise” to raise awareness of the professional expertise available at the TLG, and to respond as a “customer service agent” by supplying information. After giving short “commercials” to school meetings and informal groups, and after many coffee sessions with colleagues it became clear to this “associate” that much more was required of someone in this position.

Further Developments

Although working in an environment where tertiary institutions are increasingly adopting the language of economic rationalism, the role of a “marketing agent” trying to “sell” the idea of quality teaching and learning seemed to be over simplistic. A one-way transmission of a concept is counter to a philosophy of developmental learning which involves partnership, shared responsibility and common interests. Thus it seemed more appropriate to investigate the metaphor of the mentor as suggested by some other staff developers. A reading of the literature soon revealed that this can mean many different things, such as coach, guide, resource person, amateur trainer, reflective listener, carer and so on (Borthwick, 1994). With such a wide range of possible roles and functions it was helpful to read the ideas of Sands et al (1991) which indicates there are four main types of mentor operating in University settings :-

- 1 The Friend
- 2 Career Guide
- 3 Information Source
- 4 Intellectual Guide

There are over 400 academic staff in a variety of disciplines in our Division (for example Arts, Social Sciences, Communication, Aboriginal Studies, Social and Education). This effectively ruled out types two and four, “Career Guide” and “Intellectual Guide” as being far beyond the level of expertise, experience, knowledge and status available.

As for type one, as much as it is pleasant to meet colleagues, it is not possible to be a friend to so many lecturers, but it is possible to be friendly to a selection of people. Thus, the idea was adopted of developing networks of enthusiastic contacts from each teaching area. Then, through discussion, it was attempted to encourage the contacts to promote the idea of peer support.

Yvonne learned about University life through “osmosis” and through “critical incidents” which prompted frantic questioning of whoever was around. Thus she could identify with the role in type three, seeing the need for a “mentor” who could smooth a path when seeking information. That prompted her to collate information for her fellow workers, such as, course outlines, examples of evaluation instruments, a handbook for tutors (written by the TLG) and a checklist for course co-ordinators put out by the library. Armed with these, and the accumulated knowledge of where to find out about many aspects of teaching in the University, she began to spread the word! One recurring theme in chatting to colleagues (lecturers, tutors) was that once they had found out an answer to a small problem they would then like to read around the subject to expand their knowledge base. Simple examples spring to mind. One colleague, (not teacher trained), was intrigued by the idea of storing a unit which had very specific behavioural objectives which in turn tied into specific

evaluation measures. He wanted to spend time learning about the importance of objectives. Another had just discovered the use of an Advance Organiser and wanted to discuss this strategy. Having to be responsible for planning a unit outline stimulated a relatively new member of staff to seek information on curriculum planning. All were mindful of the need to read more, after the initial "survival" stage had passed. When asked what was uppermost in their minds, new colleagues spoke of shortage of time, the worry of presenting interesting lectures, surviving the stress of mass lectures, holding the attention of students and the need to develop other presentational skills.

Frustration caused by lack of time and knowledge about how and where to find information was often mentioned. It seemed logical to compile some handy bibliographies which gave references about the subjects people needed to investigate, put in it the items which were easily available, and give precise details where to locate them. The topics which seemed to be most generally needed were lecturing techniques, types of assessment and evaluation, and small group skills. Since the TLG had already published a guide for tutors which was very helpful about conducting small group sessions, it was decided to concentrate on the first two. It was at this stage that our Divisional Librarian was approached for help.

THE ADVENTURES OF A ROVING SENIOR LIBRARIAN

In 1992, Curtin University Library and Information Services (LIS) initiated a new strategic plan which involved the entire library staff. The library developed a vision for the future which included:

"...a client focussed, dynamic service that provides clients and client groups with ready and timely access to information, including document delivery"

"...to function with state-of-art systems and technology as an integral part of the University's teaching, research and learning programs"

As part of the planning process, staff workshops were held on the management of change and staff were asked to identify one area that they would change and how. One of the areas chosen was the "Development of the role of an information specialist" who could work out of the library and consult with clients in the division to diagnose information needs and work with Library staff to ensure that services, and collections are designed to accommodate these needs. One of the driving forces to this idea was the realisation that as academics were connected to the Internet many information sources would be available to them on their desktop. How would they need help?

The literature was explored to find examples of other libraries who had tried this type of activity. The world of the 'circuit rider' (Plunket, 1982), 'subject specialist' (Hay, 1990; Neway, 1982), and access engineer' (Campbell, 1992) were examined and ways of dealing with the changing needs of clients in an increasingly electronic world were assessed. It is a reflection of the commitment of LIS senior management to staff ideas that in 1993 a position was created for a Senior Librarian in DAESS for a trial period of one year. This position would be located in the Faculty of Education (ie. outside the library) but with the brief to analyse the information needs of the whole Division and report back. Carol was launched with a portable Macintosh and a coffee cup.

"Finding information is not easy" is one of the most often repeated phrases the Senior Librarian hears from clients. Collections and indexes to those collections are all organised differently and are often very idiosyncratic. Just knowing which index to look in to start with is overwhelming. All the indexes have very different methods for efficient and effective searching; often use different and totally different computer software. It is no wonder that staff need help. It has been found that what most academics would like, when facing any new situation (eg. teaching in a new area or finding information on the Internet), is a few quality resources as starting points. Thus when approached by Yvonne for help preparing a bibliography on lecturing techniques it was a bibliography of selected, easily available resources in a variety of types of material that was in Carol's mind.

HOW THE BIBLIOGRAPHY WAS CREATED

A search of the Curtin library catalogue showed that a lot of material could be found on lecturing technique but which were the most useful resources? It was at this stage that it was realised how useful the collaboration of a librarian and a lecturer could be. The librarian had the knowledge of which indexes to use, how to search them effectively, and how to obtain the material located. The lecturer collaborated in the searching of the indexes and appraised the material found.

Quality, availability, currency and relevance to the topic were the main criteria we used in the evaluation of material. Sources searched were the Curtin Library Catalogue (books and audiovisual material), ERIC (journal articles and ERIC documents) and Australian Education Index (journal articles and books). Results were all downloaded electronically for easy incorporation into the bibliography. Items were obtained, evaluated for relevance and the bibliography annotated.

The bibliography was also designed to explain how to find further information and includes a number of helpful hints aimed at improving the information literacy of staff, one of the library's objectives. Another benefit for the library was that the compilation of the bibliography with critical evaluation by an academic led to collection development in some areas. Some gaps in the collection were identified.

DISCUSSION

To date over 150 copies of the first bibliography have been requested by academic staff. However, we venture to suggest that the "invisible" outcomes have been as satisfying or even more satisfying as the production of a publication.

Firstly, each of us had very wide ranging briefs which needed to be refined. Discussions of our respective roles and functions revealed many features in common. We were both involved in a similar pattern of "spadework" on talking to people, setting up networks then responding to perceived needs. Some of our clients had difficulty in articulating their needs, and considerable time was spent in tactful questioning, and discussion, to diagnose the various causes of staff concern and frustration, especially new academic staff who "did not know what they did not know." By discussing our strategies and experiences we believe we were able to enhance our understanding of the interpersonal and organisational skills needed to define and fulfil our respective roles.

Secondly, our interests coincided in that we both wanted to provide simple and speedy information to our clients. Many new academic staff spoke of panic induced by the sense of overload. The librarian has the expertise to select and organise information quickly. The lecturer has a background in teaching and could supply content knowledge and an understanding of the terminology of teaching. Together we are doubly effective.

Thirdly, the publication, although useful in itself, had an unexpected effect. When giving copies to staff, the publication became a stimulus or catalyst for discussion. Lecturers wanted to know "what else" was available from the TLG to assist them in their professional development of teaching and "what other ways" could they receive help from library staff. Could Carol please show them "how to" access other information.

Fourthly, the nature of our respective roles was operating in peer relationships. We had no status barriers to being approached for help and information. For example, Yvonne's received invitations to look at course outlines and even comment on fellow teaching initiatives which would not, we believe, have been issued to anyone who was seen as a University authority figure. As Harnish and Wild (1994) suggest, the peer mentoring approach may have "potential for serving as a powerful intervention strategy" for the "creation and dissemination of instructional innovation" (p192) through informal peer interactions.

Finally, our adventures have been such that we are now in the process of planning for a second, improved, annotated bibliography on "Student Assessment and Evaluation". This bibliography will include electronic resources available via the Internet and will be more efficiently created by using EndNote as a bibliography creator. We hope also to organise a display in the Library Staff Reading Room to focus on new publications available to help staff in their teaching and learning.

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PROJECTING THE POWER OF YOUR COMPUTER

ABSTRACT

In lectures and presentations, students and trainees these days have high expectation. They expect slick computer graphics, multimedia, demonstrations of software, and even live excursions on the information Super highway. All of this can be achieved by linking the computer to a range of devices that allow images to be projected on to large or small screens. However, the technology is not yet being widely used for everyday teaching activities, because lecturers and trainers - particularly those who do not have a technical background - perceive these devices to be too complex, too bulky, too difficult to set up, and too temperamental to use on a regular basis. This paper discusses a comprehensive range of projection devices suitable for use with either small or large audiences, listing their advantages, disadvantages, and of course costs, which are falling rapidly.

INTRODUCTION

Educators are now increasingly making use of desktop presentation software, such as Microsoft PowerPoint, Harvard Graphics, and Aldus Persuasion, to create professional looking colour slides. There are growing opportunities to make use of multimedia and other computer based and CD-ROM based material to enhance lectures and presentations, requiring the direct projection of computer screen images in to the teaching room. In areas involving the extensive use of computers as either a teaching or learning aid, it is often essential that the presenter can give "live" demonstrations of computer based material. The emergence of the Information Superhighway also means that educators will increasingly want to be able to project "live" computer images. Despite these advances in technology, the most widely used visual aid is still the overhead projector (OHP), in conjunction with basic black and white acetates. The OHP is perceived by lecturers to be simple and straightforward to use, and it is generally readily available in every teaching room. However, a wide range of devices now exist that enable computer screen images to be projected directly on to a wall or screen. In this paper I will discuss the types and range of devices available giving examples of specific devices and discussing their pros and cons.

LCD PANELS

Probably the most widely used projection device is the Liquid Crystal Display (LCD) panel sitting on top of an OHP. The LCD panel is connected to a computer and the images on the computer's monitor can be projected via the panel and the projector. This is a fairly cumbersome way of making a presentation, and the equipment can be difficult to transport and set up.

The biggest problem with LCD panels is the quality of the projected image. Most OHPs are fitted with a standard 250 Watt globe, whereas the LCD panel works best with a 300 Watt or greater quartz halogen globe. This means that in addition to the LCD panel a special OHP unit is also required, and this will cost typically in excess of \$2,000. One solution is to have a trolley set up with a powerful projector, LCD panel and laptop or desktop computer. The trolley can then be moved from room to room, however in practice, this becomes very inconvenient when the equipment has to be moved between buildings or between floors.

The technology of LCD panels is not new, however it is changing rapidly in terms of number of colours, increasing panel size, ability to show video and animation. Costs are also falling steadily. A range of panels are manufactured by companies such as Sanyo, Proxima, ViewFrame, and Electroboard. The typical price of an LCD panel is \$7,000-\$9,000 for one that will project in colour from both PC and Macintosh. Many panel displays are too slow for video and animated graphics, but the newer active matrix panels can handle full motion video. The number of panels available is too large to allow each to be discussed in detail here, however, I am able to highlight the key items to consider when purchasing an LCD projection panel.

Image Size

As with an OHP and acetates, the greater the distance between the OHP and the screen, the larger the image, and the less the brightness. An LCD panel provides a *viewing window* that is considerably smaller than the that of the OHP. As you might expect, the larger the window, the higher the price tag. When purchasing an LCD panel, each of these variables has to be considered in terms of the size(s) of the room(s) in which the panel will be used, and in terms of whether or not you have, or are willing to buy, a brighter OHP. Generally speaking the distance of the audience from the screen should be no more than six times the width of the projected image.

Image Quality

- LCD technology in panels, projectors, or in a laptop computer, can be either *passive matrix* or *active matrix*. In a passive matrix LCD the pixels are turned on and off using brief pulses of electric charge. They suffer from a relatively slow response time of typically hundreds of milliseconds, and so suffer from a certain amount of blurring when the image changes rapidly. In an active matrix LCD the response time is typically below 50 milliseconds, there is less blurring of rapidly changing images, and still images are considerably sharper. Needless to say an active matrix LCD device will cost more than a passive matrix device.
- The contrast ratio is the intensity difference between pixels that are "on" and those that are "off". In a passive matrix LCD this is typically in the range of 5:1 to 10:1. In an active matrix device it is typically 200:1 and greater, giving more vivid and contrasted colours.
- Ease of Use. How easy is it to set up the panel and use it? On some panels the cabling can be very fiddly, especially when connecting an additional monitor. Some have very poorly designed controls for adjusting, colour, contrast, brightness and so on. Finally, does the panel have an infrared remote control? Does it control the computer and the panel, or just the panel?

The Proxima Ovation is a typical active matrix LCD panel capable of displaying 226,981 colours. Its resolution is 640 by 480 pixels with a pixel response time of about 30 milliseconds and a contrast ratio of 200:1. The display window is 213 by 158 mm.

LCD PROJECTORS

LCD projectors are based on exactly the same technology as LCD panels, the only difference is that the LCD projectors contain their own light source. As with the LCD panels, several companies manufacture a range of devices. The integrated light source is the projector's main advantage. The light sources are of the required brightness, and the whole unit is potentially far more portable than a panel and separate OHP. On the whole the image quality from LCD projectors seems to be superior to that of the panels, and most projectors have built in stereo audio speakers. Unfortunately these devices are not cheap, but prices are falling steadily. Most of the points already discussed with respect to LCD panels also apply to the projectors. In addition, however, the buyer, must be careful to check

both the cost and life expectancy of the light source. Replacement lamp units typically cost in excess of \$350 dollars, and last for about 1000 hours (not so bad if you think in terms of 35 cents an hour).

To give a typical example, the Sanyo PLC-300M is an active matrix projector for IBM and Macintosh computers, and also projects images from standard video cassette recorders. It has motorised focus and zoom, built-in stereo speakers, and projects 16.7 million colours. With a weight of 13.2 Kg it is easily portable. The image quality is excellent, but the price tag at about \$14,000 (ex tax) is rather high. Replacement lamps cost about \$385 and last about 1000 hours.

It is also possible to purchase more sophisticated LCD devices having either memory or a floppy disk drive. This means that there is no need for a computer as the presentation can be read straight from the LCD device itself.

RGB VIDEO PROJECTORS

Many teaching facilities are equipped with ceiling mounted video projection units. Relatively inexpensive interface devices can be purchased that enable computer screen images to be projected directly through the video projection units. As with most projection devices, quality is improving and prices are falling. The quality of the projected image can be very good indeed, but is governed by the quality of the video projector rather than by the interface device. The interface devices can be awkward to set up, however, they can be permanently installed so that a user has only a single wire to connect to the back of their computer. There is a catch however in that older video projectors may require adjustments before they can be used in this way, and may not be compatible with all IBM and Macintosh computers. Newer "data" quality projectors are much more flexible in this respect. A separate audio connection is usually required.

The Inline IN2020 video Interface is compatible with most IBM and Macintosh computers. It measures only 4.75" by 3.25" by 1.12" and weighs under 0.5 kg. An IN2020 costs about \$730 (ex tax), with additional cabling costing typically about \$150 depending on length. A separate audio connection is required.

Stand-alone video projectors are now available with built-in computer interface capabilities. These are essentially the same as the typical ceiling mounted units but may be somewhat smaller. They are usually advertised as being portable, but in practice they are far too heavy to carry around. New projectors are appearing all the time. One of the latest is the NEC MultiSync 6PG Plus, which sells for about \$27,800 (including tax). Cheaper devices are available, but prices inclusive of tax are still likely to exceed \$20,000

OUTPUT TO TV

For the small room presentation the computer can be connected directly to a conventional TV set. Some of the latest machines in the Macintosh range have built-in circuitry to enable output directly to a TV monitor without the need for additional hardware or software. At the moment this facility is limited to the desktop sized Quadra and PowerPC machines. However Macintosh laptops should soon have TV compatibility built in as a standard. Of the Windows compatible machines, to date only the latest (and most expensive!) of the laptops in the IBM ThinkPad 755c range allow direct output to TV. The quality of the output is not outstanding, particularly where viewers are expected to view written material, but it is adequate for small group presentations. The quality of the output is also dependent upon the quality of the TV monitor being used. While direct output to TV is currently limited to the top-of-the-range models of laptop computer, the required circuitry is not in itself particularly expensive, and should add no more than a couple of hundred dollars to the cost of a machine. It seems very likely therefore that such capabilities will increasingly be delivered as standard over the next year or so.

A range of devices exist that between them will interface between almost any computer and a TV screen.

For IBM PC users, the Video Expert PV-680 PC to TV Adaptor at about \$580 (ex tax) will connect any IBM PC/XT, AT 386, 486, PS2, or compatible computer. The device is controlled under the DOS operating system, but enables images generated on both DOS and Windows to be viewed on the TV, and supports the PAL standard (Australian TV standard). The screen image can be viewed simultaneously on both the TV and the computer's existing monitor or LCD display. The Video Expert is easy to set up and use, however it does require additional software to be installed on the computer, which can be a nuisance where it is being used by several different people. The quality of the TV image is mediocre, but adequate for small group presentations.

The Multigen Genlock adaptor supports all of IBM PC, Apple Macintosh, Atari ST, and Archimedes computers. At about \$1100 (ex tax), the Multigen is a little more expensive than the Video Expert, but has the additional advantages of supporting a wide range of computers, and of being a hardware-only device. The Multigen is very easy to set up and use, but as with all other inexpensive devices of this type, the quality of the TV image is mediocre.

OTHER PROJECTION TECHNOLOGIES

Other new products on the market are the Sony LCD Data Projector and the Bell & Howell Desktop Projector. Sony's projector requires the fitting of an interface board to match particular needs (i.e. Mac or PC). This projector also offers an autofocus and zoom feature which are not available on other systems.

The Bell & Howell system projects a strong, sharp image and is relatively portable. Both the Sony and the Bell & Howell are capable of projecting both computer and video outputs.

The VideoShow Presenter is a hand-held remote control which provides a miniature screen for the presenter's use. This prevents the presenter from having to look at the overhead screen thereby turning his or her back on the audience. The VideoShow Presenter also allows the presenter to preview the next image and display speaker's notes.

SUMMARY AND CONCLUSION

Many devices now exist to enable computer screen images to be projected on to a large screen. Devices exist to suit every teaching situation from large groups in traditional lecture theatres with existing audio visual facilities, to small group situations in rooms with no specialised equipment. At the expensive end of the market, the quality of the projected images is steadily improving while prices steadily fall. For those who are willing to compromise on quality, a range of less expensive devices are available that will connect to conventional large screen TV sets.

THE VIRTUAL CAMPUS - TAKING THE CAMPUS TO THE STUDENTS

INTRODUCTION

Edith Cowan University has been a major provider of tertiary level distance-education for nearly two decades. During this period the delivery mechanisms have moved from traditional approaches, to incorporate new options based on advanced systems technology. The considerable University Learning Systems infrastructure at ECU has provided a base for research into the adoption of appropriate technologies to create additional distance education options and to improve the facilities for the increasing distance education population. The main need expressed by students was the provision of effective two-way communication between students and their tutors and between the students themselves, to reduce the sense of isolation felt by many of these external students.

During 1990, the Department of Computer Science began researching the possibility of implementing a system that would allow external students to contact the University via modems and computers with the intention of emulating on-campus resources. In 1991, research was done into the software available in the public domain; later, hardware and telecommunications options were explored. The prototype system was developed from components compiled through that investigation. Security features and menu systems were built into the prototype to enhance useability and integrity. To date the system has been through a number of revisions adding to its functionality.

The system became known as the Virtual Campus. Its purpose was to provide distance education students with the 'electronic' or 'virtual' equivalent of a campus. The initial aim was to reduce the isolation of these students and to improve access and communication between students, tutors and University resources. Field trials were conducted on a prototype system by a pilot group of about 20 external students in the first semester of 1992, and full scale operation commenced in semester 2. In the second semester of 1994, the system was made available to all ECU students, both internal and external.

TECHNICAL DETAILS

The Virtual Campus system has been implemented to augment the traditional print-based medium. In order to make it available and cost-effective for the majority of students, it is a character-based system which requires no specialised software on the student's home computer.

To use the Virtual Campus, a student needs a basic personal computer with communications software capable of running VT100 emulation, a modem (at least 2400 baud) and a telephone line. Users connected to the system are on a wide variety of platforms including Macintosh, Amiga, IBM, clones, laptops, minis and mainframes. Users who are not in the metropolitan area can come in via Austpac or AARNET - ADENet is also available in the major capitals. Overseas students use Internet.

SERVICES ON THE VIRTUAL CAMPUS

Mail

Participants can exchange electronic mail messages with anyone else on the system or on the Internet, as this option has full Internet mail capabilities. This would include tutors and other

students. Everyone has their own mailbox address on the system which ensures that mail is private.

Chat Rooms

This is an open forum for real-time interactive talk, the virtual equivalent of the on-campus coffee shop or the break-out session.

Particular “rooms” are designated as tutorial rooms which can be booked by lecturers and tutors for student tutorials. The General Chat area can be used for socialising at any time. Any number of chat rooms can be created to become the virtual equivalent of board rooms, class rooms and common rooms.

Private Chat

This facility allows for private conversations between two people. Tutors may use this facility to counsel students or to give additional private tuition. Individuals may get together to discuss a shared work assignment or simply to provide mutual support. Any number of private chats can be running simultaneously.

Library

The Edith Cowan University library catalogue is available to enable students to search for books and materials. External students of the university will be able to reserve and request books and materials on-line.

Access to the other Perth universities’ library catalogue systems and other general libraries, for example the Australian National Library, is also provided.

Internet

Authorised users have access to the world wide resources of Internet through the AARNet link of the Virtual Campus system. These resources include Gopher, Network News and World Wide Web. These provide facilities such as database browsing and searching, document retrieval and communication with other Internet users.

Notice Boards

These are established to provide a public posting area for items of general and group interest. Lecturers are able to set up notice boards for particular courses or units or topics and post notices to them for the students to read.

Boards are grouped within topic areas such as general information, special interest groups, social notes and other topics as the need arises. Students also are able to post notices and, in the Social Boards area, set up notice boards for their own social needs.

Send Files (Up-Load)

Students are able to send files to tutors. These files may be assignments or portions of work for which feedback or assistance is required. Working groups can exchange files of work in progress.

Receive Files (Down-Load)

Participants can down-load files that are in the system. These may be returned assignments, an article of interest, or an update to a technical manual.

EDUCATION DELIVERY

The Virtual Campus does not create the “content packages”, which is still the function of academic areas, but rather it provides a vehicle which facilitates flexible delivery of learning materials, at lower costs and increased versatility for users in choosing how, when and where to learn.

Already staff are beginning to take advantage of the improved communications with their external students:

- they are using the bulletin boards to post additional reading material, assignment advice and examination instructions;
- using the boards to inform students of upcoming events such as seminars, conferences etc;
- using the interactive chat facilities to run tutorials, sometimes combining internal and external students in the one tutorial.

The Virtual Campus project forms an integral part of the process of developing appropriate infrastructures for the provision of alternative delivery mechanisms and flexible learning packages which is the hallmark of ECU’s External Studies programme. Such servicing (as provided by the Virtual Campus) will enable the further development of learner-centred packages. These packages should seek to improve the learning process in both quality and efficiency.

In this way the Commonwealth’s pursuit of increasing access to university education matches Edith Cowan’s twin goal of participation and quality. Through these projects, the University will be able to provide increasing opportunities for independent student learning.

USING METAPHORS AND RICH PICTURES IN UNIVERSITY EDUCATION

"Two roads diverged in a wood
.. I took the one less travelled by,
And that made all the difference"

(Robert Frost)

ABSTRACT

Can teachers and students use creative approaches incorporating metaphorical ways of writing and the drawing of rich pictures to enrich teaching-learning in university classes? We have found that incorporating these into learning journals can be a way of balancing the technicism that so often dominates technologically oriented disciplines.

INTRODUCTION

In what ways can teachers and students use creative approaches to enrich teaching-learning in university business computing classes? Instead of the *tired old technicism* that seems to dog computing education, can students and teachers alike move towards what Marcuse calls *a liberating rationality*? Since 1992, we have been conducting interpretive, autobiographical, action-research to explore this area. Students and teachers have been encouraged to work together in a dialogical way using *open discourse* to reflect on aspects of information systems beyond mere hardware and software. The teaching-learning process has included group personal introductions; the writing of personal learning journals; encouraging group work; encouraging dialogue in lectures and laboratories; highlights of humour; times of values clarification and goal setting; deciding on motivational metaphors; clarifying world-views; drawing rich pictures of the unit; the telling of stories and alternative myths; relaxation exercises with guided visualisations; and including unconscious wellsprings of knowledge in the research process.

In this paper we will briefly discuss the idea of metaphors and rich pictures as part of learning journals in university business computing classes. We will then give examples of how two mature age students used these concepts in their education.

LEARNING JOURNALS

The form that I currently use is that in the second lab students submit a sheet listing their beginning competency level in computing, their previous experience and their expectations for the unit. On the back of the sheet, students paste a recent newspaper clipping about IS and write some comments. Every second laboratory, students submit further sheets with the following headings:

- a *Reflective examination of your learning process in the laboratories*: You will describe what you are learning and how you are progressing in your ability to use computers for your present or future work. This has to be in a creative, artistic format using stories, autobiography, metaphors, rich pictures, doodles, poems, stuck-on pictures or the like.

(The philosophy behind this is that computing education is generally narrowly technician and should be balanced by creative approaches in education and professional training.

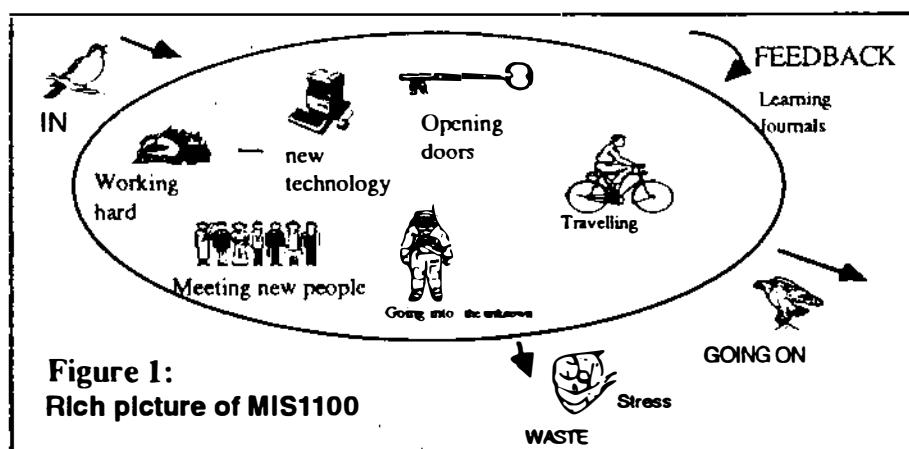
- b. *Newspaper clippings* (relevant to IS and up to date) with comments - to be stuck on the back of the sheet.

The learning journals are ranked to give a score of ten percent of the total assessment. I give a practical test in the last computer laboratory to enable students to verify the learning outcomes described in their journals.

RICH PICTURES

A rich picture is a drawing of a system that can assist in better planning or understanding. The term springs from what is known as soft systems methodology (Checkland and Scholes, 1990). This is a widely used technique for better understanding the cultural and political context of organisations in management consulting or in computer software development.

For example, the rich picture below (figure 1) was drawn by a first year student at the end of the foundation unit (Information Systems I - MIS1100) to help her understand the various elements of the unit and how she made sense of it to achieve her goals. She used an Apple Macintosh computer for the first time for 20 minutes to create this simple rich picture.



The rich picture can have an IN (or input), and area filled with relevant pictures of important areas, an ON GOING (or output), a WASTE (or wastage from the system) and REFLECTIONS (or feedback to the system). This student sees that she entered the course as a small bird and went on from the course as a powerful eagle. The learning journal provided a form of feedback in the unit and stress was the waste in the system. The icons in the rich picture are metaphors used for creating rapport and for communicating the nature of shared and unshared experiences (Lakoff & Johnson, 1980).

METAPHORS

Bowers asserts that all human thinking is both cultural and metaphorical in essence (1993, p.60). The essence of metaphorical thinking is understanding a new concept or experience by relating it in something else. Profitable ways to harness this is to avoid inappropriate generative metaphors such as the mind as "computer," mental fatigue as "burnout," curriculum as "input," and student behaviour as "output" (based on student-as-machine metaphor). A better way would be to explain dissimilarities between what is being compared and by placing metaphors in historical context (Bowers and Flinders, 1991, pp. 34-35).

He is very concerned that educators be aware of their moral responsibilities to use language in a way which helps students become part of communities and cultural and natural ecologies. For example, in critiquing the work of a computing expert, he asserts that: "The metaphor of an 'Information Age', which is the most recent expression of liberal ideology, serves to hide the moral/spiritual nature of the ecological crisis." (1993, p.93). Bowers understands that the metaphors used in education are of crucial importance - do they point to technicism or to something else? He sees current computing education as dominated by a nineteenth century mechanistic root metaphor.

Bowers (1987) understands that a much more morally responsible way as placing teaching and learning within an historical and linguistic context that assists the process of cultural-communicative competence which involves bio-regional and ecological sensitivity and self-reflexivity. In his book, *The Promise of Theory* (1984), he explored in detail the way in which classroom socialisation and cultural/communicative competence are interwoven. Teachers largely control whether the students gain the language to be able to reflect on life on culture in a mature way within a community and a social and cultural and bioregional ecology. If the students do not gain this cultural-communicative competence they continue to unknowingly live by the exhausted and inappropriate assumptions from previous times.

SUSAN'S STORY

"I have given up a section of my life for the last 12 weeks to MIS1100. I have given my time, energy, frustrations, tears and laughter, a minute fraction of my life's travel and I have been rewarded twenty fold. Regardless of the mark on a piece of paper at the conclusion of this unit, I have passed. I have gained knowledge and confidence in the area of computers. When I look back I was panicked in the early part of the course, not in the lectures, but in the unfamiliar areas of word processing, setting up files, all the everyday things I employ others to do. I had a string of adventures, and I have become friendly with the systems maintenance people across two campuses. My job is to make people feel good by filling up their otherwise boring evenings getting me out of scrapes. I wish to heap accolades on these people, and suggest if all students had some real interaction with them the knowledge would flow, and the campus would be a much friendlier place to work and study in. I no longer inwardly panic, I take pride in getting into a mess and fighting my way out, and if there are people to help me along the way, how much richer is the experience." (learning journal, 12 November, 1993).

A mature age student working as the head of an accounting section, Susan was a hard-working person with a very positive view of life. She *took up the challenge* of university study balancing this with a rich family and community life in addition to her responsible career position. As she commented in an interview: "I have come from a stage of panic to non-panic - this is a big step for me. It is not really competent yet but non-panic is a real gain. I'm not panicked by computing and computers anymore." (interview, 23 October, 1993). In this quote and the quote above, note the metaphors of "stage of panic to non-panic"; "a big step"; "a minute fraction of my life's travel"; "a string of adventures"; "heap accolades"; "I take pride in getting in a mess and fighting my way out"; and "knowledge would flow". Let us look at the rich picture Susan created at the end of the unit.

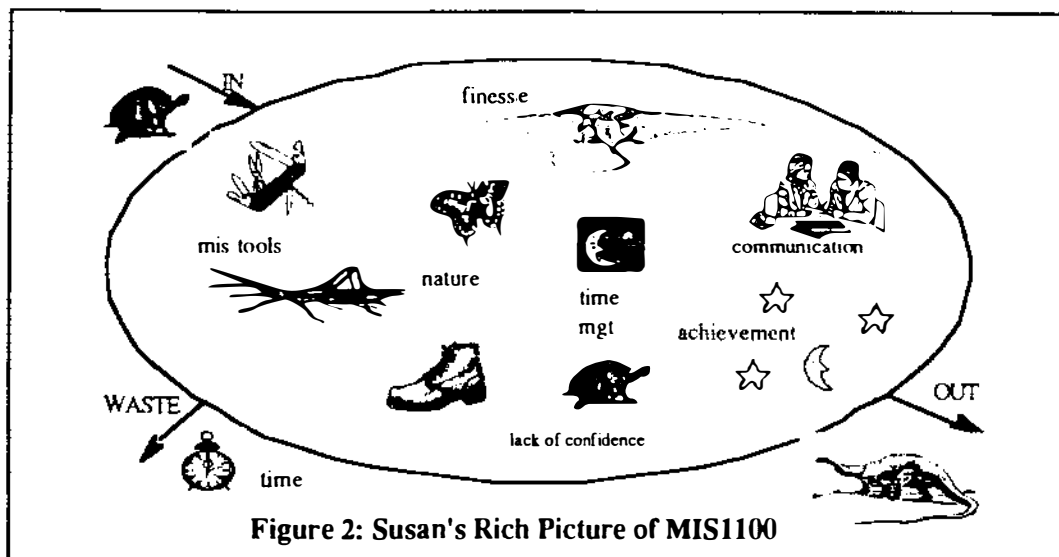


Figure 2: Susan's Rich Picture of MIS1100

The laboratory group which Susan was a part developed a lively and friendly community camaraderie giving each other nicknames - hers was the self-styled nickname "the little old dinosaur". We see how she sees herself entering the course as a slow moving turtle with "lack of confidence" and, although time was seen as waste from the system, she emerges as a strong dinosaur. This is a curious metaphor and could easily been seen in a negative light. However, in Susan's case I think it represents a humorous way of expressing strength and growth in the context of a rich learning community.

NIGEL'S STORY

Nigel was a mature age student returning to formal education after a number of years away. His background was in accounting and he had rather limited contact with modern microcomputer usage and information technology. He has a very positive approach to the unit. In his learning journal he developed a metaphor for his expanding knowledge based around 'The Wizard of Oz':

....So I used this metaphor about going down the yellow brick road and the castle, it' a bit corny but it seemed to be what he [the lecturer] wanted so I let go, I started to do a lot of creative writing and a lot of landscapes and people coming in and so it's turned into a novella...I found it good to do although doing it over 14 weeks it becomes harder to bring in new characters and it gets a bit corny but I actually have enjoyed doing it that way....If people are allowed that sort of scope then you can write it as a novel, you can put into any sort of format you want. It's something I wasn't aware of. Because as I said you have to do structured things in other subjects I only sort of moved the margins a bit so that slowly I filled them out. (interview, October 21, 1993)

The above metaphors are legion. Nigel's creative talents found expression in this way of educating. His positive approach to life is reflected in a comment made in one of his learning journals about Robert Frost's poem which heads this paper: "This paper is about not being one of the sheep in life". That said, he stated that with his background in systems installation much of the benefit of the unit was in the actual technical knowledge gained. He saw himself as "a pirate in the high seas of IT and picking the gems" (interview, October 21, 1993). This is mirrored in his rich picture (figure 3 below).

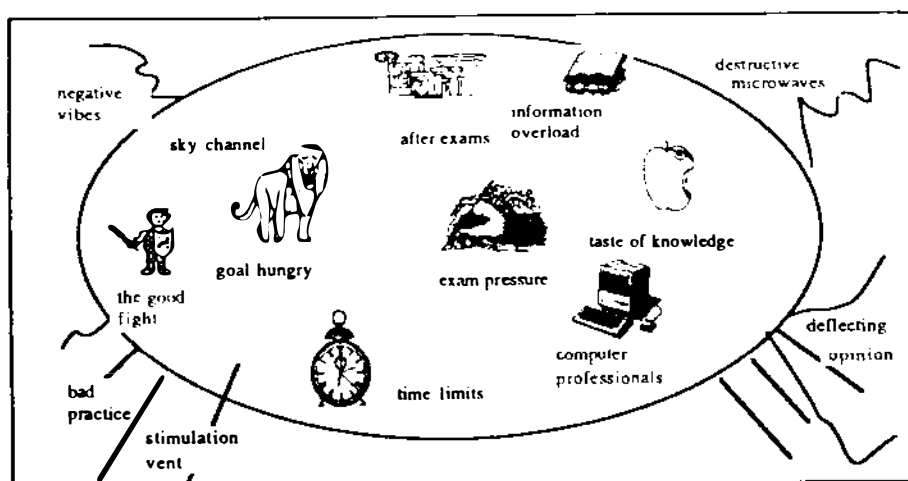


Figure 3: Nigel's rich picture of MIS1100

DISCUSSION

In this paper we have not discussed our motivational and guiding theoretical frameworks which include the notions of cultural and communicative competence in the educational thinking of C.A. Bowers (1988, 1993); critical social theory notions of what is equitable, fair and good (Adorno and Horkheimer, 1990; Marcuse, 1964; Habermas, 1972, 1984, 1987); the holistic elements of soft systems methodology (Checkland and Scholes, 1990); and the Jungian psychological notions of the unconscious and individuation (Jung, 1953-76). Suffice to say that a certain theme of recent literature on computing education from Joseph Weisenbaum (1977) through to C.A. Bowers (1993) has warned of a dominance of technicism - an - over-emphasis on technique to the detriment of meaning or purpose. The concern is with an overly narrow emphasis on hardware and software computing techniques and an undue trust in technical solutions to human problems. This way of thinking is sometimes referred to as an *instrumental rationality* (Adorno and Horkheimer, 1990; Habermas, 1972; Dryzek, 1990), a *technocratic consciousness or technocratic rationality* (Habermas, 1972; Bowers, 1988, 1993; Ellul, 1990) or, more simply, as *technicism* (Bowers, 1988, 1993).

By incorporating metaphorical language and rich pictures in learning journals in university business computing, we have observed considerable numbers of students and teachers express themselves in ways that are unusual for this discipline. In this process we suggest that there has been a kind of educational wholeness, a blossoming towards balanced attitudes, a balancing of the technical with the artistic. In our more poetic moments, we see this as hints of human splendour within an otherwise instrumentally rational and technocratic milieu.

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MASQUED MEANINGS: STUDENT EVALUATION OF TEACHING

ABSTRACT

What does it mean when 81% of students state that there was high pressure on them in our course, when only 48% thought that the work load was heavy? This was one of the results obtained from the Course Experience Questionnaire (Ramsden 1991) recently completed by first year Social Work students at Curtin University of Technology.

The use of standardised student survey is being encouraged by key decision makers in DEET and universities as an evaluative tool to assess and improve teaching and course quality. This strategy resonates well with current organisational wisdom that in evaluating the quality of a service or product the involvement of customers is required.

Such surveys are arguably a valid and reliable index to comparatively measure the quality of teaching in any degree program. Their standardised nature however limits their use in taking action for improvement. These surveys provide no more than a global index of perceived teaching quality. They are blunt tools by which to enhance academics' understanding of what is required to improve their teaching.

The paper reports and reflects on how two lecturers from the School of Social Work at Curtin University of Technology use the CEQ results as a springboard to engage in a collaborative process of inquiry with students. The range of meanings embedded in student evaluation are mapped as we seek to make explicit understandings of 'good teaching and good courses' with regard to this particular course. From this mapping we have become conscious of the "differing reasonings" students use in evaluating their course experience. Using a frame developed by Kemmis (1994) we suggest that practitioner course development needs to consider "differing reasonings" in changing for quality.

INTRODUCTION

The Course Experience Questionnaire (Ramsden, 1991) has been administered by Curtin University to first year students since 1993 as a standard assessment of teaching quality across university courses. Our project used the results of the CEQ as a springboard to conduct a focus group in which first year social work students detailed meanings behind their obtained scores. We hoped thereby to map student perceptions as to what facilitates and constrains teaching and learning in order to improve the quality of teaching in the first year of the social work course at Curtin.

Standardised questionnaires to measure the quality of teaching of individual lecturers; particular degree programs; or complete institutions are commonly used (Marsh, 1987). In consequence some have concluded that an objective index for measuring teaching quality exists free of context. Rather as Ramsden (1993:93) cautions, student's assessment of teaching effectiveness must always be contextualised and are perceptions not objective ratings. Measures of teaching quality need to be sensitive to a range of factors, including the discipline being taught, the degree of familiarity the learners have with that discipline and the nature of the student body (Nightingale and O'Neil, 1994; Neumann, 1994).

Acknowledging that "quality is a messy variable" (Cross, 1994, 1) this project aims to unpack some of the reasoning behind the evaluation a group of first year social work students gave of their course experience. Listening to students in this focused manner could strengthen our ongoing reflective practice of constructing, in concert with other stakeholders, a quality course experience.

QUALITY ASSURANCE AND THE USE OF PERFORMANCE INDICATORS: THE CEQ

The Higher Education Council has declared that the 1990s will be 'the decade of quality' (1992:7) . Analysts of such rhetoric (Nightingale and O'Neil, 1994; Beecher, 1994; Curtis, 1994; Sachs, 1994;) argue that the quality agenda is primarily driven by economic and political requirements of the Federal government and has concerned itself more with meeting the demands of external accountability than with internal quality improvements. Responding to this demand, there has been a growth in the development of quantitative performance indicators, particularly those measuring quality of teaching. Research historically has been the focus of quality assessment in higher education in Australia (Becher, 1994). Expanded access to university education in recent years and a strong agenda of economic rationalism, has produced this political focus on the quality of university teaching (Cross, 1994).

The Australian Performance Indicators in Higher Education Research Project (Linke 1990), funded by DEET, recommended a national trial of the CEQ as part of its program of testing potential performance indicators for standardised application across institutions. The CEQ was designed to measure the quality of teaching of academic organisational units--whether these be degree programs, departments or faculties (Ramsden 1991). Respondents indicate their agreement or disagreement on a five point measure of 30 statements. The statements fall into one of five scales identified in previous research as reflecting dimensions of effective instruction within higher education: Good Teaching; Clear Goals and Standards; Appropriate Workload; Appropriate Assessment; and Emphasis on Student Independence and Choice (Appendix 1).

Ramsden (1991:133) states that 'CEQ's guiding principle ... was a requirement to produce - as economically as possible - quantitative data which permit ordinal ranking of units in different institutions, within comparable subjects areas, in terms of perceived quality teaching.' For reasons of validity, Ramsden (1991:145) cautions against the use of the CEQ as a global measurement of teaching performance between institutions or between different fields of study. The CEQ is best used to provides feedback to institutional decision-makers on the performance of each internal department relative to equivalent departments in other institutions.

THE STUDY METHODOLOGY

In 1994 Curtin University surveyed all first year students across all degree programs. The results were incorporated in the quality portfolio submitted to the Committee for Quality Assurance in Higher Education. Additionally the result were forwarded to each School, with no general requirement that Schools respond or take action on the data. This stands in sharp contrast to Ramsden's(1991:149) conclusion that 'evidence of how a course or department responds to the data . . . might be regarded as one of the most important indexes of its educational effectiveness.'

If the primary concern of administration was to satisfy the scrutiny of external powerholders, the provision of this data to our School seemed a fortuitous opportunity to research from a locally controlled quality improvement perspective (Sachs, 1994). In 1994 we independently administered the CEQ to 48 students enrolled in the first year of the Social Work program (61% of total student enrolment in the Behavioural Science unit - a core social work unit). All 48 respondents were then invited to attend a focus group to explore in greater depth the survey results. It was a measure of student interest in the project that 25 students (24 females and 1 male) indicated a willingness to attend this focus group to be held after semester finished. Sixteen female students actually

participated in the group which was jointly facilitated by the two researchers. Both of us have had extensive experience as social work practitioners and educators.

The group ran for some three hours with the students being given a copy of the CEQ results and asked to respond to a series of open ended questions grouped around each of the teaching quality scales. The ethos of the group was one of enthusiastic and engaged participation. With student permission, the discussion was taped and transcribed for further analysis by the researchers.

THE COURSE AND ITS CONTEXT

The Bachelor of Social Work is a four year vocational degree program, with two semesters of field practicums. On graduation students readily find employment as social workers (or related positions) in the public sector or non government agencies.

Each year approximately 70 students enrol representing 50% of eligible applicants. Characteristically students arrive with a strong motivation to undertake the course. Social work remains a predominantly female profession, with men making up only 20% of the total student body. Given the nature of the work undertaken by social workers, it is not surprising that only 25% of our student intake is drawn from school leavers. In fact our admission procedure by weighting for employment and life experiences related to social work, indirectly favours non-school leavers. Students come from diverse ethnic and minority backgrounds. Some have an employment history within the human services, others are making a career shift, and yet others are at the beginning of their professional journey after having been full-time carers for a number of years.

Like the students, the academic staff also come from a variety of lived experiences and maintain a range of positions (sometime compatible, sometimes not) around what constitutes the domain of social work. There are a range teaching styles represented. Academic staff differ from the student body in the sex ratios, as 50% of teaching staff are men, with 60% of senior lecturers being male.

Over the last decade there has been a decrease in funding allocated to the School, with a resultant increase in staff workloads. All staff are in agreement that this has had primarily negative consequences on the quality of teaching. For example there has been an increase in the size of tutorial class from 12 to 16 students and a reduction in time allocated to students for professional development.

WHAT CONSTITUTES GOOD COURSE EXPERIENCE IN THE 1ST YEAR OF THE BSW

The School of Social Work scored 83% overall satisfaction with the course compared with an average score of 72% for all Curtin courses. None of the social work group were dissatisfied compared with 13% of the Curtin-wide survey sample. The School performed at or well above the university profile in four of the five CEQ scale areas (see Appendix 2). In the clear goals and standards scale in contrast, on all four questions students rated the course below the standard attained by the university as a whole. Additionally there were specific questions on which we scored poorly or results seemed incongruent. So in response to question 7 within the Good Teaching Scale, some 72% of students indicated that they did not believe that staff put a lot of time into commenting on their work. Even though this score was the same for the university as a whole, to us it was a matter of concern in seeking to improve teaching. A lack of congruence emerged in comparing responses within the Appropriate Workload Scale. While 81% agreed that there was a lot of pressure on them as students in this course (Q. 21), only 48% thought the workload was too heavy (Q. 4). Within the same scale 70% of social work students agreed that the sheer volume of work in the course meant that it couldn't be thoroughly comprehended compared to 52% of all students (Q. 23).

In analysing the dialogue from the focus group around the above concerns, it was often difficult to gain a clear sense of direction for improvement. Unambiguous directions for improvement usually related to organisational matters such as access to texts. In the overall picture however, a pattern emerged that, what was cited as a strength of the course would appear re-framed as a weakness. This re-framing occurred both within the one student and in the ongoing interaction between students.

CONTRADICTIONARY STUDENT REASONING

Bad teaching is:

"repetitive. . . dull, sparse. . . too much. . . just rattling it off. . .most of the time she had an overhead and she wasn't talking to the students, she was just rattling things off. We just didn't feel a connection or a bond with her at all".

"I was really interested. . . but . . .I missed lots because it was just all going through like a machine. . . It was presented more as a science than a humanity. . . just facts with no interaction which was difficult".

Good Teaching is:

"He had such a passion that I don't think anyone could sit through those lectures and not feel motivated to do their best work. And if you compare that say. . (where) there was no passion and there was a big difference".

"I think that there's such a difference between people who just want to transfer knowledge and lecturers who want you to know for a higher reason. . . ."

"You're actually other than just absorbing knowledge."

"You came out of those lectures feeling moved and changed, altered." (quotes from Focus Group Tape Nov. x 1994)

The researchers, being long-standing practitioners of social work as a process-centred, value-based discipline of caring for the casualties of modernism and scientific progress, resonated with such student rejection of objectivism in teaching practice. However the tape also undeniably recorded many instances in which more objectivism was demanded by students. There emerged much ambiguity, contradiction and contestation as to what students meant by the measured score. On teaching, a dissenting position on the machine-like nature of the above teacher's presentation style was voiced:

"I can't really fault her . . . that's what we're there for, it is just to consume it. . . . she rarely had time for people . . . asking questions because she was just so busy".

Turning from teaching per se, different expectations emerged across a range of teaching related issues. With reference to assessment:

"There should be a standard between the lecturers and tutors"

was a very common theme unmasking some of the meaning to our lower scores in the Clear Goals and Standards Scale. On the other hand a competing meaning around assessment was given by other students such as in the following statement:

"People want the answers, they want the answers to everything, so they're giving their tutors a hard time and saying "well what's the answer?". There is no answer. . there is no one answer. . . I felt valued from my personal life experience viewpoint and the sense that I've made of stuff that's been presented in the course".

For the students, 'what was learnt' in the course proved an important yardstick in evaluating their course experience. In the record of the dialogue there are numerous opinions expressed on this theme of 'what was learnt'.

"To be strong about your beliefs and that you are a worthwhile person and that your opinion is worthwhile and should be listened to. So it makes you much smarter, I found that I grew up a lot in the course".

"The content of the course and the skills I've learnt in it have helped me to defend my indignance . . . Whereas before I was just indignant, now I can defend them".

"Knowledge makes you stronger . . . and the knowledge that you get here does make you strong".

Beliefs, values, and process are as important in these statements as the actual content learnt. Recognising this helped us as researchers connect and make sense of students' wanting reflexive creativity and wanting clear goals and standards. The students actually made this connection overtly when they cited their experience of a specific exam as a "horrible display of what was not explained". Though the exam was designed to allow for creativity, students condemned the lack of clear guidelines and set standards. Assessment that disregards an instrumental approach to learning, leaves open the possibility that teaching staff can decide on an acceptable performance as they please.

"(Some staff) feel that they are in a position of power and that they are going to use that power, then that's really intimidating".

In talking of what was learnt and the stress involved, it emerged that for many becoming a university student was highly stressful and against deeply held convictions of not belonging at university. Students spoke of losing hair, periods and husbands in the first months of wondering whether they could meet expectations--theirs, ours and others. The workload was stressful at times but for many stress was greatest in applying ideas learnt in the course to self-reflection.

"Some of the things you discover about yourself you might not really like. . . it makes you fragile for a while".

The workload per se was just part of this stress. Processing the workload and its application and interplay with the rest of their lives was as significant. There was general agreement that as students become more practiced in balancing the competing demands of their lives, so they feel more positive about the course and their ability to manage. A valued part of learning to manage were the many discussions with other students that built a sense of collaborative student power.

DIVERSE BUT CONNECTED PATTERNS OF STUDENT REASONING

Reflecting on this issue of the play of power among stakeholders in higher education, we noted how little has been written about student powerlessness in the current debate on quality. Stephen Kemmis(1994) identifies differing reasonings used by educators in debating the nature of educating for teaching practice. He offers a useful frame to understand the diversity of our students' comments on their experience of being educated for social work practice. The frame highlights shifting power relationships among stakeholders in any setting. Drawing on the work of philosopher Alisdair MacIntyre (1988, 1990), Kemmis suggests that there are three different types of reasoning that inform social expectations. Each form implies different patterns of social relationship between the reasoners and those reasoned about. The three reasonings Kemmis (1994) characterises as instrumental (or technical), practical and critical. All three types of reasoning can be identified in the focus group dialogue.

The technical reasoner adopts an objectifying stance towards others in a setting. Others are colloquially identified as "**Them**". This reasoning is evident in the expressed student wish that all lecturer interaction with them over marks and assessment be standardised, objective and publicly known. Clear goals and standards provide a power base from which students can negotiate their way through the course. While this is an area in which the School could improve the equity of teaching, more instrumentalism alone did not seem the answer. Rather the task is to achieve a balance between the three reasonings, always considering the context in which each form is expressed.

Practical reasoning, in contrast to technical, adopts an interpretive stance. It argues for the importance of lived experience in understanding the human condition. Other people involved in a setting are knowing subjects who are "autonomous and responsible agents" (Kemmis, 1994.6). These others are called "**You**". Practical reasoning was evidenced in our focus group in the many comments made about how the course enabled students to develop as knowing, autonomous and responsible individuals. They valued teachers bringing their reflected lived experience and passions into class.

Critical reasoning "treats the others involved in the setting as co-participants, who, through their participation in the practices which daily constitute and reconstitute the setting both as system and as life-world, can work together collaboratively to change the ways in which they constitute it, and thus change both system and life-world" (Kemmis, 1994, 6). The word used here about others is "Us". In the focus group this form of reasoning pervaded talk of student interaction but included us in the deconstruction of the power issue involved in the lack of exam guidelines. This exam story was told in the spirit of us working together to prevent a recurrence of what students experienced as an injustice. Such critical reasoning was introduced again when students raised anxieties over practicums. They questioned whether the costs involved, financial and social, made the social work course elitist in contrast to our professed values. It is noticeable on the tape how we as researchers used our power to steer the conversation back to what we considered were research concerns.

Kemmis (1994) argues that it is a key task of university educators to recognise the existence and value of all three reasonings. Personal resonance and/or political imperatives can be used by those in power (for various reasons) to suppress or amplify one or more of these forms of reasoning. As noted above in the focus group we suppressed critical discussion about course changes. We defensively shifted to an instrumental discussion at that point. Arguably we were reinscribing the style of much higher education discourse, where those in power endeavour to impose the form of reasoning to be used. Kemmis argues that premature closure of discussion by all stakeholders by those in power prevents fully reflected and informed decision-making.

WHERE TO FROM HERE

This framing from Kemmis unmasked for us the seeming messiness of contradictory comments about quality made by social work students. A wealth of ideas on how to improve teaching in the social work course has emerged from the exercise. The first step in this seems to be to keep the dialogue going between staff, students and other stakeholders without imposing premature closure on the discussion of how to improve the quality of education. At the same time there are a number of tasks that can be addressed immediately to improve the quality of teaching in the social work course such as ensuring ready access to texts, clearer guidelines for task assessments and uniformity in exam procedures.

More generally, this study demonstrates that quantitative measurements of teaching quality while providing a useful overview, do not offer a deeper evaluation that takes into account specific disciplinary and pedagogical matters operating at the local level. For that open and interactive communication is needed.

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THE COURSE EXPERIENCE QUESTIONNAIRE

Please respond to the following questions on the basis of your Curtin course. By 'course' we mean the full range of units/subjects taken so far. If your course of study allows you to choose a major, your answers should refer to the Department or School in which this major subject is undertaken; otherwise, refer your answers to the Faculty, School or Department responsible for your current course at Curtin.

PLEASE NOTE THAT THE FOCUS IS ON THE COURSE SO FAR - not any single unit.

My current course is _____
 (eg. Bachelor of Commerce)
 in the Department/School/Faculty of _____
 (eg. Curtin Business School)
 and my major subject (if applicable*) is _____
 (eg. Banking) *if double major, nominate one only

HOW TO ANSWER

Simply circle the number beside each statement that most accurately reflects how you feel about your course so far:

PLEASE ANSWER ALL QUESTIONS

In my course at Curtin so far

	Strongly Disagree		Unsure		Strongly Agree
1. It was always easy to know the standard of work expected	1	2	3	4	5
2. My studies developed my problem solving skills.....	1	2	3	4	5
3. The teaching staff of this course motivated me to do my best work	1	2	3	4	5
4. The work-load was too heavy	1	2	3	4	5
5. My studies sharpened my analytic skills	1	2	3	4	5
6. I usually had a clear idea of where I was going and what was expected of me in this course.....	1	2	3	4	5
7. The staff put a lot of time into commenting on my work.....	1	2	3	4	5
8. To do well in this course all you really needed was a good memory	1	2	3	4	5
9. My studies helped me to develop my ability to work as a team member.....	1	2	3	4	5
10. As a result of my studies, I feel confident about tackling unfamiliar problems	1	2	3	4	5
11. My studies improved my skills in written communication.....	1	2	3	4	5
12. The staff seemed more interested in testing what I had memorised than what I had understood.....	1	2	3	4	5
13. It was often hard to discover what was expected of me in this course	1	2	3	4	5
14. I was generally given enough time to understand the things I had to learn.....	1	2	3	4	5
15. The staff made a real effort to understand difficulties I might be having with my work	1	2	3	4	5
16. The units were overly theoretical and abstract	1	2	3	4	5
17. The teaching staff normally gave me helpful feedback on how I was going	1	2	3	4	5
18. My lecturers were extremely good at explaining things	1	2	3	4	5
19. Too often teaching staff asked questions just about facts.....	1	2	3	4	5
20. The teaching staff worked hard to make their subjects interesting.....	1	2	3	4	5
21. There was a lot of pressure on me as a student in this course	1	2	3	4	5
22. My studies helped me to develop the ability to plan my own work	1	2	3	4	5
23. The sheer volume of work to be got through in this course meant that it couldn't all be thoroughly comprehended	1	2	3	4	5
24. The staff made it clear right from the start what was expected from students	1	2	3	4	5
25. Overall, I was satisfied with the quality of this course	1	2	3	4	5

What has been the best aspect of your course so far? Please write below.

Which aspect of your course is most in need of improvement? Please write below.

THANK YOU FOR YOUR HELP

10740-7-94

Curtin University of Technology
Institutional Research Office

The 1993 & 1994 First Year CEQ Results

Course : 678

Title : Bachelor of Social Work

Results on the top line are for the social work course, 1993. Results in () are for all Curtin respondents, 1993. Results in the third line are for the social work course, 1994.

The Good Teaching Scale

	<i>strongly disagree</i>	<i>percentage</i>	<i>strongly agree</i>	<i>No.</i>
3. The teaching staff of this course motivated me to do my best work.	8 (5) 2	24 (24) 8	8 (40) 25	48 (9) 6
7. The staff put a lot of time into commenting on my work.	16 (11) 10	48 (36) 29	4 (26) 23	32 (5) 4
15. The staff made a real effort to understand	13 (6) 0	25 (25) 29	25 (33) 21	29 (10) 8
17. The teaching staff normally gave me helpful feedback on how I was going.	12 (6) 0	28 (29) 30	8 (35) 30	40 (8) 6
18. My lecturers were extremely good at explaining things.	0 (5) 0	16 (22) 15	24 (40) 27	52 (7) 6
20. The teaching staff worked hard to make their subjects interesting.	4 (5) 2	8 (20) 4	8 (45) 23	63 (10) 56
			17 15	24 48

The General Skills Scale

	<i>strongly disagree</i>	<i>percentage</i>	<i>strongly agree</i>	<i>No.</i>
2. My studies developed my problem-solving skills.	8 (2) 0	8 (12) 2	25 (22) 25	42 (48) 54
5. My studies sharpened my analytical skills.	0 (2) 0	4 (9) 4	20 (23) 13	52 (47) 48
9. My studies helped me develop my ability to work as a member of a team.	16 (8) 6	8 (21) 19	12 (35) 21	40 (12) 8
10. As a result of my studies, I feel confident about tackling unfamiliar problems.	4 (3) -	8 (14) 9	13 (27) 21	67 (46) 57
			8 19	24 47

11. My studies improved my skills in written communication.	8 (4) 0	12 (15) 6	12 (17) 15	32 (44) 40	36 (21) 40	25 1611 48
22. My studies helped me to develop the ability to plan my own work.	8 (3) 2	20 (10) 24	12 (18) 13	52 (50) 52	8 (19) 9	25 1597 46

The Clear Goals and Standards Scale

	<i>strongly disagree</i>	<i>percentage</i>			<i>strongly agree</i>	<i>No.</i>
1. It was always easy to know the standard of work expected.	8 (5) 6	52 (28) 32	0 (13) 32	36 (47) 30	4 (7) 4	25 1616 47
6. I usually had a clear idea of where I was going and what was expected of me in this course.	12 (6) 0	32 (23) 35	16 (17) 21	36 (44) 40	4 (11) 2	25 1615 48
R13. It was often hard to discover what was expected of me in this course.	8 (7) 4	40 (36) 30	8 (20) 28	24 (30) 32	20 (7) 6	25 1605 47
24. The staff made it clear right from the start what they expected from students.	16 (6) 15	48 (26) 31	4 (20) 21	20 (38) 23	12 (11) 4	25 1614 48

The Appropriate Workload Scale (R)

	<i>strongly disagree</i>	<i>percentage</i>			<i>strongly agree</i>	<i>No.</i>
R4. The work-load was too heavy.	4 (5) 2	36 (31) 31	12 (20) 19	32 (30) 40	16 (14) 8	25 1605 48
14. I was generally given enough time to understand the things I had to learn.	4 (8) 11	13 (25) 26	8 (17) 20	63 (43) 40	13 (8) 2	24 1606 46
R21. There was a lot of pressure on me as a student in this course.	4 (5) 0	38 (22) 15	25 (16) 21	13 (35) 66	21 (23) 15	24 1615 48
R23. The sheer volume of work in this course meant that it couldn't be thoroughly comprehended.	4 (5) 0	36 (21) 13	16 (19) 17	28 (33) 40	16 (22) 30	25 1608 47

The Appropriate Assessment Scale (R)

	<i>strongly disagree</i>	<i>percentage</i>	<i>strongly agree</i>	<i>No.</i>		
R8. To do well in this course all you really needed was a good memory.	60 (26) 44	24 (34) 33	4 (12) 10	12 (21) 8	0 (8) 2	25 1612 48

R12.	The staff seemed more interested in testing what I had memorised than what I had understood.	46 (16) 15	38 (35) 40	8 (23) 27	4 (19) 15	4 (7) 4	24 1613 48
R19.	Too often teaching staff asked me questions just about facts.	21 (7) 4	42 (35) 60	21 (42) 23	17 (14) 9	0 (2) 4	24 1607 47

The type of course R6

	<i>strongly disagree</i>	<i>percentage</i>	<i>strongly agree</i>	<i>No.</i>
R16. The units were overly theoretical and abstract.	16 (13) 6	36 (38) 49	4 (22) 17	36 (20) 26
			8 (7) 2	25 1613 47

Overall Satisfaction

	<i>strongly disagree</i>		<i>percentage</i>		<i>strongly agree</i>	<i>No.</i>
25. Overall, I was satisfied with the quality of this course	4 (2) 0	12 (11) 0	4 (14) 17	64 (56) 64	16 (16) 19	25 1614 47

CONSIDERING THE CULTURAL CONTEXT IN TEACHING AND LEARNING FOR KOREAN TERTIARY STUDENTS BY WESTERN TEACHERS

ABSTRACT

As a result of increasing economic progress in South Korea, more Korean students are travelling abroad for academic purposes. Until recently, knowledge about Korean students has been limited and sometimes subject to narrow and sometimes, unduly restricted and biased views. Though not readily apparent, Korean students display some fascinating and unique culture-specific behaviours and psycho-social nuances, the knowledge and understanding of which can facilitate and enhance the quality of teaching and learning.

This paper will report on an action research study focusing on work at Edith Cowan and Chung-Ang universities, examining Korean tertiary students' and Western teachers' conceptions of learning and instruction. These conceptions will be closely linked to cultural constructs. Evidence of a mismatch between Korean students' expectations and those of Australian teachers will also be discussed. To highlight this, several examples of the cultural specific behaviours will be described, and these will be linked to appropriate teaching methodology. The research is theoretically based on humanistic-affective and socio-cultural paradigms and aims to dispel any notions of stereotyping and value judgments.

Teaching in Korea expanded both my experience and my world view. As Friedrich Nietzsche explained;

Ultimately, no-one can extract from things, books included, more than is already known. What one has no access to through experience one has no ear for.

On one of my first days of teaching an English class in Korea to tertiary Korean students, I randomly divided the students into groups of four and set a discussion task. To encourage spontaneity I stepped aside for a few minutes and then returned to their progress. Moving from group to group I heard the following; "My name is... I'm studying ... I come from.... My family... I enquired about this and was told, "We don't know each other." Even though we had practised introductions in other group activities there were now new group configurations and they "needed to introduce each other first." I discovered that by Confucian tradition it is extremely important to establish status and that until formal introductions are made, the students are considered to be non-persons (Hur & Hur, 1988, p.37). Thus here my students were accommodating both my instructions and adhering to their important Korean tradition.

Another situation occurred shortly afterwards. I provided a choice of debate topics and then asked the students for their decision. One by one the response was "I don't mind... I don't care." I delved further. "No professor has ever given us a choice before. The professor is the expert." I took note. My world view was expanding. I began to reflect and read about the captivating and complex background of my Korean students.

This paper focuses on three areas;

1. Aspects of an action research study at Edith Cowan and Chung-Ang universities, examining Korean students' and Western teachers' conceptions of learning and instruction
2. Reflections of cultural implications in teaching Korean tertiary students
3. Discussion of ways to address the cultural issues and ideas to facilitate the teaching and learning process

One of the reasons for an in-depth exploration of my teaching experience was that I found that teaching Korean students was a very different experience for me than teaching Japanese, Chinese, Malaysian or other Asian students. There are significant differences in the expectations and learning styles which are influenced by the unique cultural background of the Korean students. Certainly there are similarities to other Asian students but it would be unsatisfactory and deleterious to the quality of learning for Korean students to consider them in an identical way. This is supported by Volet and Kee (1993, p.1) who, in a comprehensive study of Singapore students, also recognise the importance of acknowledging individual differences and reject a stereotypical view of overseas students.

A strong feature which still influences Korean society and which contributes to a distinctive cultural flavour is Confucianism. It is beyond the scope of this document to describe fully this philosophy and its links with Korean behaviours in the classroom, however, awareness of the frequent close ties is important. The philosophical tradition persists despite many economic, political and sociological changes occurring in Korea at present.

In addition, though some Korean students may express complete disinterest in Confucianism, they still remain bound by its approach to disciplinary habits of work and study, life and play (Korean Overseas Information Service, 1993, p. 128). For instance, after returning to Australia I received a letter from one of my students stating that he would like to be my friend. He said he had felt uncomfortable about the idea whilst I was in Korea because the Confucian tradition prevents persons with a large age difference, as well as being teacher and student, becoming friends. This links with the strongly perceived hierarchical status in most relationships. Only between two friends, usually of similar age, is there a sense of equality (Macdonald, 1990, p.16). Furthermore, given names are rarely used, reserved for family and close friends. Hence this is probably why I am receiving letters with "Hi Cronin!"

Several cultural factors of significance became apparent during my teaching experience in Korea. Some, such as bowing, personal questions and smiling became evident during social situations. Others such as introductions, class status and gender differences were identified during class activities. Psycho-social traits such as *noonchi*, *chemyon* and *uri* were ones which I explored further through research, particularly by two Korean academics, Choi Soo-Hyang and Choi Sang Chin, as well as informal discussions to broaden my understanding of specific behaviour manifested by my students. *Noonchi* refers to "reading another's mind" and then using tact accordingly. *Chemyon* relates to "social face" and *uri* to the collective aspects of Korean society.

In order to increase my knowledge of ideas which would improve my teaching and enrich the learning environment of my students, I interviewed Korean students both in Korea and in Australia, seeking information, particularly on initial difficulties in learning English from Western teachers. Their main areas of concern related to a mismatch in expectations between student and teacher, initial language difficulties, misunderstandings relating to cultural differences and some adjustment difficulties in requirements to participate and employ academic critical thinking. The following are difficulties experienced by a sample of students at Edith Cowan:

1. Understanding accent and intonation of the foreign teacher, and interpreting body language
2. Adjusting to new modes of thinking and ways of presenting material
3. Having fear of making mistakes and lack of confidence in speaking
4. Experiencing unfamiliarity with decision making and requests for critical thinking
5. Wanting to respect inherent Confucian status differences of both peers and teachers
6. Being unaccustomed to independent academic thought with the teacher regarded as expert and learning experience as rote
7. Overcoming traditional discouragement of participation and being able to ask questions in class
8. Feeling concern at lack of understanding of Korean ways by foreign teachers
9. Wishing to relate to the teacher on a more familiar basis but not knowing how
10. Experiencing a mismatch between their expectations and goals, and those of the teacher

As well as interviewing some Korean students I also talked with some Western teachers who had Korean students in their classes. Most of the teachers with whom I had a discussion spoke of the students' respect for the teacher, politeness, enthusiasm, good nature, diligence and sense of humour. However, some of the teachers indicated that there were differences between teacher and student in understanding and expectations in the learning situation. They expressed aspects such as the situation of some students not being happy with seemingly "low level" or fun activities, the students were not used to being interactive and that, "We teach learning to learn but they have a different learning ethos."

What can be done to improve these situations? First and foremost I believe awareness, respect and practical consideration for particular Korean cultural behaviour is very important. This may reduce the incidence of misunderstandings and in addition, increase rapport. Secondly, sensitivity towards the behaviour and attitudes demonstrated by Korean students is necessary. Thirdly, making teaching and learning situations explicit by discussion and negotiation is also paramount.

Knowledge about some of the fascinating and unique features of Korean behaviour means that the learning environment can be established accordingly in classes of Korean students, or accommodations made in respect to individual Korean students. Moreover, in the planning of lessons acknowledgment needs to be made of student participation and decision making. Time needs to be taken before commencement of lessons to discuss common and disparate expectations, with a view to reaching a consensus and shared view of the goals of learning. Teaching learning strategies that enable students to monitor their own learning places the focus on the student to have responsibility and ownership.

Into the classroom we bring our world view; our personal perspective based on our experiences, beliefs and values. This world view may be inappropriate or inadequate in another culture and require adaptation and broadening. A prior knowledge and understanding of some Korean history, culture; including language background, and some knowledge about the psychological makeup of Korean people can facilitate the interactive process in teaching and learning with Korean students. However, it is also important to have a willingness to reach out and adapt to others in addition to this understanding. A cultural sensitivity is paramount for enhancing quality of communication conducive to learning.

Finally, to quote a Korean proverb; it is undesirable and limiting to be *like a frog in a well*. A broad, open-minded world view is far more enriching.

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THE ENHANCEMENT OF STUDENT UNDERSTANDING OF SUBJECT ISSUES WITH THE USE OF AUDIO TAPE RECORDED INTERVIEWS

ABSTRACT

The author of this paper has been teaching in the Department of Construction Management at Curtin University for one year following a career as a Construction Manager in the in the U.K. and more recently Australia.

This paper considers how one may enhance student understanding of subject issues with the use of audio tape recorded interviews played back in lecture or tutorial situations. It is designed to be a simple alternative and supplement to industry representatives speaking in attendance, who may for a number of reasons be unavailable at the time when the topic to be discussed would be most advantageous to a class.

The paper is based on an actual interview with Mr. Mike McLean of the Master Builder's Association (WA) and his participation is acknowledged with thanks, the example presented is in the form of a case study. The main body of the paper discusses in some detail the methodology in producing the interview and presenting it to a class.

Objective review and student feedback to enlist their response to deliveries of this nature is discussed in the paper.

The paper considers some aspects regarding the use of audio tape recorded interviews as a teaching learning aid and it is the writers hope that it will provide the reader with sufficient information to carry out their own similar exercises in the future successfully.

The conclusion considers possible future enhancements and variations to the original theme with the use of different technologies, examples of alternative uses of the original medium are also briefly discussed.

OBJECTIVE

The primary objective is to assist student learning by providing a wide range of short lectures or tutorials, diverse but relevant throughout the course of a unit of study. This may be achieved with the valuable assistance of guest speakers currently active in industry. In busy industries it may not always be possible for guest speakers to be available when preferred, or at all, in some circumstances and it is the writer's opinion therefore that the use of audio tape recorded interviews played back to the students provides a valuable and useful alternative.

Secondary objectives which should be considered are the current nature, the interest and the enthusiasm that may be injected into a unit of study via guest speakers. These fundamentals would appear to enhance student learning.

METHODOLOGY

Initial Contact

It is important that early initial contact with the interviewee is made to ensure that the time required to prepare the questionnaire is available, some additional time subsequent to the interview is also required to edit the recording and produce allied slides or overheads together with any other material to be used in the final presentation.

Whether the initial contact is made personally or by telephone one should discuss the subject matter briefly and be particularly careful in obtaining consent for the tape recording of the interview and subsequent playback to the class.

Questionnaire Design

The second task is to collate the subject matter and design the questionnaire, to achieve this an understanding of the subject is required which ensures that the questions are relevant, some discussion at the initial contact stage may assist in the preparation of this. A first draft may be forwarded to the interviewee if required so that any anomalies can be cleared up prior to the actual interview.

Time spent in the preparation stages will save a good deal of time later in editing the tape.

The questionnaire, once finalised, should be issued in advance to allow the interviewee time for some "homework" and this also ensures clear answers at the interview. The final draft of the questions should be short, concise and as noted before, relevant.

The time available to you should also be borne in mind; how long do you expect the interview to last, similarly a two minute answer on the tape may promote a ten minute class discussion!

Interview

The preparatory work is complete, the date for the interview has been confirmed and armed with the portable tape recorder the final draft of the questions and associated trappings it is time to attend the interview. In order to reduce any unnecessary editing of the tape it is probably best to have a "full dress rehearsal" of the introductions and brief format prior to switching on the tape recorder. To ensure that the equipment is functioning correctly tape a short portion of the discussion and play it back, this will save the embarrassment of having to re-tape the entire interview again! Once this, and any pleasantries are out of the way the interview may commence. A glass of water available to each party is also a good idea to avoid a sticky mouth or constant clearing of ones throat.

As the interviewer it should be your responsibility to introduce the subject, his or her organisation and the topic of the interview. These may be expanded upon in class prior to the presentation. If at all possible the interviewer should ensure that the answers are kept on track and along the lines of the questionnaire. Some diversity will inevitably be introduced and it is conceivable that additional questions may come to mind. If they are relevant to the discussion at that moment in time there is nothing to be lost by interjecting, in fact this will give rise to a more relaxed atmosphere and enhance the final product presented in class. Generally, however, attempt to maintain the structure of the interview to avoid unnecessary rework of the tape. Avoid sipping coffee - it comes out on the playback!

Attempt to keep the interview relaxed, allowing for natural variations in tone and pitch of the voice, both theirs and yours. As a courtesy allow time at the end for the interviewee to give a short "plug" for his or her organisation, or may be mention an appropriate associated issue (perhaps a lead in to your next interview). He or she may just wish to provide you with some PR. Tape it - after all, you don't have to play it back to your students!

Reviewing the interview

Back at the office the task of reviewing the interview and editing the tape recording as appropriate is undertaken. Primarily one has to ensure that the tape is audible, hopefully the equipment has been set up correctly and has not malfunctioned, at this point the importance of the short trial run should be emphasised. Assuming that all has gone well a simple task of editing out any irrelevant or muddled sections and deleting the jangling of the coffee cups where possible should ensue and in a relatively short time an acceptable product should be available.

The structure of the lecture presentation around the reviewed and newly edited tape follows normal practice that is well documented by others, to supplement the tape play back one may wish to produce overheads or slides to support discussion or anticipated questions. A whiteboard if available may be used to elaborate on other more general questions.

Presentation

All of the preparatory work is now complete and the main event, that of playing the tape to your class, is next. As noted before lecture and tutorial presentation, format and venue are well covered in other book and papers, for the purpose of this discussion document a few tips may assist; arrange the classroom to suit the limited equipment generally available, round table or horseshoe plan shape of desks or chairs seems to enhance discussion and interaction, ensure visual access to the overhead, if used, and the white board, if required, for clarification of any points raised.

The original questionnaire should be redesigned to allow space for the students to make notes as the interview and subsequent discussion takes place. Play the tape, pausing after each question is answered, this allows time for class discussion, use the overhead for elaboration of any pre-empted points of discussion, and use the white board for discussion and elaboration of further questions. If a particular point seems to be lost on the class or requires further clarification then simply rewind the tape back to the start of the particular segment and review the content.

Review

Very soon after the presentation it is useful to review your aims and objectives, this will enhance any future use. Some of the questions worth asking yourself may encompass the following;

Did the class appear interested? The change of format in itself will often promote interest and this is certainly the case in the writer's limited experience using this technique.

Did the students respond to the points raised on the audio tape?

Was the class discussion open, honest and enthusiastic?

Did the questions raised indicate the student's understanding of the issues?

Was the room layout suitable?

And finally an important point that should be considered with regard to the equipment used, could everyone hear the audio tape?

Feedback

An important aspect of any presentation, tutorial or lecture is to recap proceedings and obtain feedback, this exercise it is not an exception to that rule. One should determine responses along the following lines in this particular instance;

Was the topic of interest and relevant to the unit or course of study?

Did the students benefit from the class discussion, did the class appear to be enthusiastic? (This point certainly gives an indication of the interest promoted.)

Did the interview raise awareness of the topic and did it fulfil the students expectations?

Should the questionnaire be amended to any degree, are there any questions that should have been raised in the light of the class discussion that were originally omitted.

OUTCOME

The use of audio tape recorded interviews provides an up to date presentation of subject issues structured and disseminated to a class. A distinct advantage is that it provides an avenue for busy guest speakers and saves them valuable travelling time. The structure of the lecture is maintained and may be controlled by the lecturer. Additional advantages are that the information may be reused on successive occasions whilst current and from the student's point of view the change of format livens up a long lecture.

The medium of audio tape recording is relatively cheap and simple to use, the technology is well established and familiar to all and in general people feel comfortable with it's use.

The mobility of the equipment is a further premium and interviews may be conducted in most circumstances. Perhaps journalism is the best example of this.

CONCLUSION

What of the future? The speed with which audio tape recorded interviews can be captured lends itself to a series of lectures on fast changing and topical themes, examples that spring to mind include Industrial Relations (the writer's original theme), Information Technologies, and Electronics. Case studies including perhaps recordings of several speakers with opposing views played back to back for discussion is another example where the audio tape may be utilised. A final example is role play, where the audio tape recording could be used as a telephone in conjunction with a pre-written scenario typical to the course of study.

Use of video recordings may seem to be a natural progression as the technology becomes more straight forward, however, the adaptability of audio tape recording and its flexibility would, in the writer's opinion, give it an advantage.

Perhaps it is not possible to replace the personal presentation, but audio tape recorded interviews represent a supplement and allow variation to existing themes and adaptation to suit various contexts from lecture through tutorial to workshops.

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SCHOOL-BASED TEACHER EDUCATION: THE LIVED EXPERIENCE OF STUDENTS, TEACHERS AND UNIVERSITY STAFF

ABSTRACT

In 1994 the staff of the Faculty of Education at Edith Cowan University, Bunbury Campus and several local primary schools developed a collaborative problem-solving model for preservice teacher education. The aim of the project is to allow teacher education students to work in schools for longer periods than is currently the case and deliver part of their program in the school setting, addressing real educational problems with the guidance of university staff and school personnel. SBTE rests on the assumption that more time spent in schools will lead to better outcomes for student teachers, classroom teachers and university staff. This work in progress sets out to investigate the extent to which this assumption matches the lived experience of those people involved. It will examine several themes emerging from this study to date: (1) The importance of understanding the broader social, economic and political context in which teachers, students and university staff operate; (2) The changing power relations between schools and universities; (3) The qualitative aspects of supervision by both school-based and university-based staff; and (4) The desirability of moving toward 'critically reflective' practice in a whole-school setting.

INTRODUCTION

In America, Britain and now Australia, pre-service teacher education is undergoing profound change. Undoubtedly, 'teaching practice' is one of the most contested issues in the debate about the nature of teacher education. Throughout the 1980's a growing chorus of dissatisfaction culminated in a UNESCO report which summarised the criticisms of teaching practice as follows: lack of preparation for diverse situations; lack of linkages between subject matter and teaching processes; difficulties in placement of student teachers; uneven use of schools for practicum experiences; lack of direction of student teachers; lack of positive teacher models; confrontation in supervision situations; lack of consistent supervision; lack of training of cooperating teachers; lack of credibility of college or university supervisor; unclear expectations in the supervision situation; lack of 'ownership' of practicum program; and lack of communication between institutions (Learning to Teach, 1994, p.6).

In response to these criticisms school-based teacher education has gained momentum as a more desirable model of teacher education. The *Discipline Review of Teacher Education in Mathematics and Science* (DEET, 199) the *Ebbeck Report* (1990), *Teacher Quality* (School Council, 1989), *Australia's Teachers: An Agenda for the Next Decade* (Schools Council, 1990), and the more recent Ministerial Statement *Teaching Counts* (1993, p.7) all argue that effective teacher education courses depend on a strong partnership between universities and schools. As a result, Government education policy is committed to the reform of teacher education. As teacher educators working in this reform context we find ourselves caught between two conflicting tendencies. On the other hand, the government's reform agenda presents many positive moments and possibilities. It offers university staff and teachers working in collaboration the opportunity to bring about fundamental change to teacher education and school level practices. On the other hand, the current debate has a negative and more sinister agenda in terms of the desire of governments to reduce expenditure and to emphasise the training and technical aspects of teaching practice. We are very aware that the current drive to

restructure teacher education is a part of a much larger political, economic and cultural struggle to redefine the character of Australian society (Marginson, 1993; Frankel, 1992).

A general dissatisfaction with the technical training emphasis in current teaching practicum contributed to our decision to explore the possibilities of School-based Teacher Education. In addition, our close working relationship with many local primary schools in the Bunbury North and South Districts provided a further incentive to develop closer links with teachers interested in school level change.

The analysis presented here is by no means exhaustive. At this stage of our research we simply want to offer a sample of the sorts of issues, concerns and problems that seem to be emerging from various individual biographies. It is our hope that the ideas presented in this brief summary will stimulate comment and further dialogue.

WHAT WAS OUR AIM?

The aim of the project was to explore the extent to which the strong positive claims made by advocates of School-based Teacher Education matched the experiences of those involved in the long-term practicum in Bunbury.

HOW DID IT GET STARTED?

The Bunbury project began late in 1993 when Professor Max Angus spoke with the staff about the possibility of offering some final year students the opportunity to spend a longer period in schools than the standard ten-week term, and to take their university courses largely within the school setting. We canvassed the students and several local school principals and found that there was very strong support for such an initiative. Twenty-one students and five schools volunteered to participate, but we felt that a trial on this scale would overtax our meagre resources, particularly in terms of staff time.

In the end eight students were selected to spend all of semester 1 1994 in two schools. The students were required to have a sound academic record and a grade of "Highly Satisfactory" on their fourth practice, as we did not feel it was fair to place any additional pressure on students who might be considered at risk. Additional selection factors operated according to the particular contexts, for example, one school required that students be sympathetic to its Catholic ethos, while the other needed students who were willing to work in multi-age, junior primary classrooms.

Both schools were in favour of School-based Teacher Education in principle, but both were also involved in specific school reform and could see the advantages of having student teachers in the school to work with and support the teachers in the process of change. We were confident that our new approach could achieve this, and at the same time offer our students a better and more "authentic" practicum experience.

HOW DID IT OPERATE?

The students were in the schools for three days per week through first and second term. They participated in school planning and professional development, and were involved in staff and cluster meetings. The other two days were to be used for reading, tutorials and assignment work. This format was the end result of much discussion and negotiation as we were concerned to maintain fairness and comparability with those students continuing with the mainstream programme. The practicum guidelines were revised to reflect these organisational changes but the evaluation criteria and assessment procedures remained substantially unchanged.

University assignments were modified so that the students were able to take advantage of the classroom contexts in which they were working. Case studies, programmes and resource packages to address particular needs were the focus of student assignments and assessment. Once again, these were open to negotiation to a far greater extent than in the normal programme.

HOW DID WE FIND OUT?

To build a picture of the SBTE program we decided to use *qualitative* research methods. The research methodology falls within the broad parameters of *action research* or *reflective practice*. According to McCutcheon and Jung the salient characteristics of action research are captured in the following definition:

Action research is characterised as systematic inquiry that is collective, collaborative, self-reflective, critical, and undertaken by the participants of the inquiry. The goals of such research are the understanding of practice and the articulation of a rationale or philosophy of practice in order to improve that practice (1990, p.148).

Student teachers, classroom teachers and university staff used a combination of oral stories and *written reflections* to construct their own biographies. We felt that *oral stories* would provide an important dimension to the investigation by providing public discussion of what was primarily personal and private. Personal biography enables people to identify what is important to them and this is quite different from examining the 'real' world of people with a preconceived set of questions with inbuilt answers already assumed or predicted. It allowed us to uncover the insiders' view of their own experiences.

Written reflections provided another important means of revealing the nature of individual experience. In this case some of the participants reflected on what happened to them during the day. Writing a personalised narrative of what happened allowed the participants to organise an account of their teaching in a way that was crucial to finding and speaking their own voices (Smyth, 1992; Tripp, 1993; Elliott, 1991; and Gitlin et.al. 1992).

WHAT DID WE LEARN?

We believe that under the appropriate conditions SBTE can be an effective element in pre-service teacher education and importantly, in the professional development of both classroom teachers and university staff. Nonetheless, our experiences have shown us that SBTE faces numerous hurdles, some of which have been alluded to in the above stories. In developing closer partnerships with schools it is our experience that the following appear to be important factors that require further investigation:

General issues:

- the extent to which participants should share the same assumptions about the nature of teaching;
- the degree to which teachers can become more involved in the development, delivery and assessment of courses;
- the enormous amount of planning time involved in course development and negotiation;
- whether the whole program or only parts of it are school-based;
- negotiating who will provide additional funding and support for university staff and teachers involved in SBTE;
- the extent to which SBTE can address matters of equity and fairness;

- developing appropriate collaborative and collegial decision-making mechanisms in different school contexts; and
- negotiating an agreement on requirements, commitments; and responsibilities of all participants.

For student teachers:

- whether the teacher was sympathetic and supportive;
- the extent to which university supervisors expectations matched those of the school and teacher;
- the extent to which school-based experience would disadvantage them in formal university examinations;
- the extent to which students should conform to existing practices; and
- the degree of comparability between student grades in different contexts.

For teachers:

- the role teachers are expected to play in supervising, reporting and grading students;
- the extent to which teachers should be involved in developing and delivering course work;
- The time teachers should devote to workshops and meetings with student teachers and university staff;
- the funding of replacement teachers to attend meetings;
- whether students are responsible to attend the university or school in the first instance;
- the degree to which teachers should be familiar with university courses and approaches.

For university staff:

- the degree to which teachers can become more involved in the development, delivery and assessment of courses;
- the enormous amount of planning time involved in course development and negotiation;
- whether the whole program or only parts of it are school-based; and
- the extent to which ownership and responsibility for teacher education lies with the school or university.

WHERE DO WE GO FROM HERE?

We began this study intending to contrast the SBTE model with existing competency-based models of teacher preparation. Our most important discovery has been that there is no "model" as such for SBTE: the experience is invented anew in each case as students, teachers and university staff struggle to redefine their roles and develop solutions to problems that arise out of each particular context. The old categories of student competency were no longer an issue: almost all of our time and energy was consumed in dealing with conflicts that arose out of the broader themes of power and social change. In dismantling the rules and requirements of an older system we found that everything had to be negotiated, and while this was often exhausting and frustrating, all participants were aware of its positive potential.

It is interesting that all participants said or implied that they would choose to undertake SBTE again - under the right circumstances. Our next task is to develop a clear, detailed and responsive picture of what those circumstances might be.

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INTERNET: THE EDUCATION INTERFACE

ABSTRACT

The use of INTERNET and the International Superhighway as an undergraduate teaching resource is growing more rapidly each day.

The number of computers connected to INTERNET is estimated to be in excess of 2 million worldwide and is increasing at the rate of 2,000 per day.

Consequently, there is a growth in both the formal and informal use of INTERNET access by undergraduates as a means of supporting their literature and information searches.

This paper discusses some of the approaches students use to benefit from INTERNET access and contrasts this with the, as yet underutilised, use of INTERNET by academic staff. Also examined are some of the reasons why educators are slow to fully utilise this resource to enhance teaching and learning.

In addition to addressing the barriers to educators adoption of teaching strategies using INTERNET, the opportunities in using the network to provide international teaching and non-teaching support services, such as enrolment, course query, and assessment information, are also examined.

Security of information on INTERNET and copyright issues are also reviewed, and examples of effective teaching using the superhighway are also given. These include examples of easy to use graphic interfaces as a means of reducing technological inhibition barriers for both educators and students.

INTRODUCTION

INTERNET is a network connecting computers around the world, originating from the interconnection of a few university research groups in the USA to facilitate an exchange of information to support research for military purposes. The network has since grown to include the connection of most higher educational institutions and government bodies around the world. Although INTERNET specifically excludes commercial activities it is now becoming widely used by industry to support their businesses.

The number of INTERNET connections have grown since its early adoption and by 1992 the number of computers connected approached one million. In the few years since has exploded to almost 20 million connected users. The connection of users is accelerating at a rate almost too fast to count, providing the basis of access to very rich sources of information on almost any subject.

Users connect to INTERNET through computer networks which have a gateway into the digital communications network. Connection between networks in towns, cities and countries are being upgraded to carry high speed computer traffic and are being further expanded using optical fibre technology to carry huge amounts of wideband, very high speed digital traffic. This enables fast transfer of large quantities of data and facilitates the use of high quality colour images, video and audio in network communications. These links are being called the "Information Superhighway", or more recently the "Infobahn".

Management of INTERNET is by the co-operative collaboration between bodies controlling each aspect of the technology and its transmission and access (such as the universities and Telecom). Consequently, use is governed by self imposed protocols and polite behaviour.

INTERNET SERVICES

INTERNET supports a range of services, usually maintained, managed and controlled by the host network providing the service. Access to each of the services is by the host computer providing controlled access into a "public" area. These facilities include image libraries, document and database information and other library services. Many organisations now provide research data and software for free use. Other services such as electronic mail (email) are available through mail servers on host machines.

To access these facilities the user must be registered as a user on a network and have a valid network address.

INTERNET USE

Until recently, access to network facilities and services required some skill as a programmer or at least a knowledge of command line instructions to effect the required data transfers. This was inevitably a major hurdle for the less computer literate user and was further complicated by the need to have a knowledge of the operating system commands for the computer network providing the data. Protocols ensured the computers could talk to each other at a "digital" level but did not help if the user could not understand operating system command structures. Host computer networks often provided a "help" menu but these were often very basic, command line driven and the user needed to know how to invoke them. Further, the user needed to know which computer held the information and what the address of the computer was before even a cursory search of the required information was possible.

These shortcomings inevitably prevented all but computer buffs and the very brave (or insane) from enjoying the considerable benefits of access to computer systems around the world. This is still the preferred method of accessing data (on some occasions) by some computer specialists because data transfer can be speeded up to more optimum levels with many of the "frills" removed from the transfer mechanisms.

The transition of the computer to the desktop and its growth in popularity as a tool to be used by those without programming expertise was brought about by the development of effective graphic user interfaces (GUI's) and enabled less computer literate users to use computers effectively. Network access was improved first through the extension of the command line to command line menu options. At the very least the user was still required to be fairly keyboard literate. Choices for user services were made using a command line menu by the user responding with the number of the menu listing required. Command line instructions were still needed to extract and transfer information in many cases.

The migration of the computer to that of a desktop tool, the development of GUI's and better terminal emulation capability has changed the nature of access to INTERNET services. This has obviously been accelerated by the connection of many offices and desktops to institutional LAN's, providing much more convenient use of computer facilities.

The more adventurous and computer literate students have always taken advantage of INTERNET services such as library and information search facilities like VERONICA, GOPHER, ARCHIE and email despite the poor interfaces available. The problems have been mainly that of tracking progress through these services, often with the result that the user ends up "lost in hyperspace". More recent improvements in the interfaces has helped.

The student has generally found the library search facilities and email to be the most useful of the services provided. Use of email to other students has predominated, with many staff unwilling or unable to contact students (or even each other) through email. Lack of desktop network connections prevented many staff from optimising their use of email although many institutions are addressing this issue.

Even though improvements in GUI's has negated many of the "lack of computer skills" fears, some academic staff are still reluctant to use email to communicate with students for fear of being overwhelmed by a large number of queries requiring responses.

The limited interactive (and less immediate) nature of command line or email communication on INTERNET has also been a limitation in its effective use in some education processes. Being predominantly text based, this was a clear barrier to most academic staff using INTERNET in teaching or learning other than a research and search tool.

Even submission of assignments in anything other than text based, hardcopy form has been actively discouraged by some academic staff. The advantages of electronic communications are studiously ignored by many reluctant staff.

However, the nature of a command line or menu interface produces real problems and has resulted in reducing willingness to use INTERNET (in that form) as an exciting educational tool.

NEW DEVELOPMENTS IN INTERNET INTERFACES

The development of very effective GUI's has now begun to significantly impact on the use of INTERNET by both staff and students. Suddenly it has become an exciting and responsive medium. The first of the really practical interactive GUI for INTERNET has been that of MOSAIC, developed by the US National Center for Supercomputing Applications (NCSA). Mosaic is an interactive interface which can contain text, images, audio and video. It is constructed to contain "hotspots" which are clickable areas linked to other information, forming an international web of hyperlinks. MOSAIC is now being eclipsed by newer and more flexible GUI's such as NETSCAPE, which in turn will no doubt be supplanted quickly by even more exciting and user friendly GUI's.

The catalyst for the development of GUI's such as MOSAIC was the provision of a new information service called World-Wide Web (WWW). The WWW was started by the European Centre for Nuclear Research (CERN) as a means of establishing a distributed hypermedia system. This hypermedia system linked information on a wide range of computers using hyperlinks to establish a web-like structure of connected text, images, audio and video. The user may use browser programs to read and fetch documents by clicking on highlighted text which is addressed to the source location of the required information. The information may be further linked to other applications or sources by other users, forming a web of interconnected information.

One of the main advantages of this browser technology is that it can still access the more familiar applications such as Gopher, Veronica and other search and File Transfer protocols (FTP). [Smith 1993].

The transfer of the desired information to the local site reduces network traffic and the user is connected to the source only for the data transfer duration.

Students who have discovered (or been directed to discover) this new phenomenon are enthralled by the vast amount of information access that the visual interface reveals. The use of INTERNET has risen to such an extent that some institutions are concerned that the network traffic is too high. Techniques such as making information available in a structured form for more than one user, having previously transferred the information in to the local network

ONCE, could reduce network traffic for those teaching applications which are amenable to this approach. This leaves network capacity for those applications which need the freedom to "surf the net".

The emergence of "Information HOME Pages" for institutions and groups linked to relevant information provided by the host has grown enormously yielding a information rich window to view an organisation, its data and its activities. It also provides a convenient and attractive medium for the provision of on-line educational programs and student services.

The vast quantity of information and its myriad of web-like links is a daunting prospect for the wary network traveller but the principle GUI's have some navigation tools to assist with relatively efficient search methodologies. However the open access to worldwide sources of information exacerbate the (as yet unsolved) issues of security and copyright protection. Legal demands and a more professional approach to information protection is clearly needed. This may be compounded by the situation where copyright issues cross national boundaries with different and conflicting approaches to the problem. [Picton-Warlow 1992]. This can only be solved by international laws or agreements. Currently, the only effective control is that of self imposed common sense.

OPPORTUNITIES WITH, AND USES OF THE NEW INTERFACES

Some universities and other institutions are encouraging staff to use LAN's to present course content and other supporting material. This is often extended to promote links to international sources of information considered to be relevant to the studies. Further advantages are gained when students are encouraged to present projects, art and other eminent work on the network to enhance the provision of information and the standing of the institution.

The institutions are also able to be vast electronic libraries, particularly when linked with other bodies containing complementary material, and are able to display artefacts, pictures and other media. An example of this is Australian National University which provides electronic access to a vast library of Australian and Contemporary art.

The provision of courseware, particularly if appropriately interactive, opens up new opportunities in education. These advantages are just not for those in distant locations but for those who have to (or prefer to) study in a mixed mode or open environment.

Clearly, a new approach to content and delivery techniques is possible (and is even desirable) with courses presented in this way. The development of the "virtual campus" is an exciting reality. The main issue in providing educational information using MOSAIC type GUI's is that of appropriate construction for education purposes, a skill which is not yet widespread in the academic community.

The academic, constructing curriculum delivery for the electronic medium is duty bound to ensure that a simple translation of existing course material to the new environment is not carried out. This of course moves many academics into an unfamiliar realm, that of "multimedia education" with its attendant nuances and appropriate techniques.

There are some early, reasonable examples of education via INTERNET/WWW GUI's the most notable of these is the establishment of INTERNET training courses delivered on INTERNET. On one course over 15,000 participants from 50 countries registered. [Smith 1992]

Production of hypermedia material for MOSAIC and WWW is particularly easy if you have the content and image assets. These GUI's have the capability to utilise ASCII text or word processed documents and translate them to MOSAIC/WWW documents using HyperText Mark-up language (HTML) or Standard Generalised Mark-up Language (SGML) to indicate headings, pagination, paragraphs and hot-spots. The developer then has to provide the HyperText Transfer Protocol (HTTP) addresses to link to other information. [Brandwein 1994]

These GUI's also have the capacity to contain buttons and response areas, and can even have check boxes or areas for user preference selection. This enables the users to respond with queries or provide answers in text or multiple choice modes. The advantages for educational audit are yet to be fully explored or utilised.

These interactive response attributes open up new areas for INTERNET use to benefit students. Apart from the teaching and learning opportunities, students can benefit from the provision of institution, enrolment and course information in HOME page format. This has been carried out in only a limited and fragmented form, relying on interested staff to provide the resource rather than as a response to an institutional information strategy.

The benefits to be gained in providing student information in this way are legion. Many institutions depend on international student income and the policy of these countries to retain students at home and build their own educational resources are beginning to impact on Australian university income. Therefore, co-operative and collaborative approaches to mixed educational delivery, comprising home and Australian aspects for international students will be essential in the near future. Using INTERNET will assist in the delivery of Australian courses overseas and provide a very efficient means of disseminating course and study information and responding to student queries.

These opportunities take on major significance when one considers that Malaysia, Indonesia and Singapore are providing a computer and INTERNET connection in schools for every student. This is supported by funding initiatives to ensure that their countries are covered by a web of optical fibres to carry the data network traffic at the highest possible bandwidth.

The operation of respective international student services in Australian academic institutions can greatly be facilitated by even the use of simple text based email on INTERNET to contact prospective and existing students. Opportunities for students to respond (even with simple check boxes) to housing, travel, visa and course information in a structured manner over the network can be a very efficient aid for administrative staff. Although at least one institution in WA is committed to trialling and examining opportunities in this area, unfortunately this is yet to become wide spread practice.

SUMMARY AND CONCLUSIONS

The use of INTERNET and its emerging GUI's with world-wide web links will have a rapidly growing impact on both teaching and non-teaching activities in Australian universities. Academic staff who are less responsive to the demands of the newer student learning approaches, including on-

line and electronic delivery and provision, will be left behind in a rapidly expanding educational culture.

Academic institutions will have to address the provision of hardware and learning resources to take advantage of a changing educational environment. This must include the encouragement of formal and informal use of the INTERNET by students to communicate with their peers and other sources of knowledge. Research and training of staff in the development of suitable techniques and material is essential if students are to obtain optimum benefit from the use of new technology in their learning process.

Network managers will need to plan for an astronomic growth in network traffic and demands for network connections in to this environment. Current responses calling for a reduction in INTERNET traffic below self imposed limits (by cost or technology provision) do not endear them to avid INTERNET users caught by the WWW bug. At the same time users and developers of educational and support material on INTERNET will have to explore and encourage the use of more efficient search strategies and information transfer techniques to optimise the active time involved in INTERNET communications.

Finally, the legal profession will be driven towards a common set of security and copyright laws and rules which give maximum protection to the originator of original work yet allow its effective use in the education process. This will be a long and traumatic process and woe betide the institution or individual user chosen as the "classic" test case - it may be very expensive!

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WOGS, BUGS AND GRUBS: HANDS-ON MICROBIOLOGY AT HOME - AN OPEN LEARNING AUSTRALIA EXPERIENCE

ABSTRACT

Microbiology is a very visual subject and necessitates students visualising and working with living microorganisms. For full understanding of concepts and application of knowledge students require hands-on practical experience. Difficulty is often encountered in obtaining clinical material and students are at risk of exposure to potentially pathogenic microorganisms. These risks are even more pronounced when courses are taught externally, especially when providing practical experience for unsupervised students completing microbiology units at home.

This paper describes the development of the theoretical and practical program, the problems encountered and the health, safety and legal issues faced in developing Introductory Microbiology 1A through Open Learning Australia (OLA). The unit with its home-based practical kit is the first of its kind developed for the distance teaching of microbiology in Australia.

INTRODUCTION

Given the present situation in the Australian tertiary sector of more students wishing to attain limited places in universities, increasing pressure is being placed on academics to produce innovative, quality teaching programs for students on ever decreasing budgets (Gawthorne, 1990; Baldwin, 1991). Australia's size and sparsity of population has meant that these study programs must be in a delivery mode that is suitable for both on and off-campus students. As well, students who are missing out on University placement and people in the general community who have a genuine desire to learn but placement and people in the general community who have a genuine desire to learn but who lack university entrance requirements are demanding access to tertiary studies.

Open Learning Australia which was established in 1992 is now providing University accredited units to all Australians and international students who wish to participate. Fees charged are equivalent to the HECS contribution paid by traditional university students.

Of the many units now offered through Open Learning Australia, most are print-based but there are audio and video supplements as well as broadcast television components in some areas. All units offered until the end of 1994 were non-science and theoretically based. Introductory Microbiology 1A, offered in the first study period of 1995 by OLA became the first science unit with a hands-on practical component which the students could perform at home.

Microbiology is a very visual subject and requires opportunities for students to view and experiment with living organisms. Practical experience is essential for the understanding of concepts and applications of knowledge to the clinical laboratory and other related areas. The laboratory sessions involve considerable repetitive practical work and difficulty is experienced in the provision of clinical material essential for these practical classes especially with increased potential hazard to students from diseases such as HIV/AIDS and Hepatitis. The problems are even more pronounced when microbiology courses are taught at a distance.

Laboratory based distance education courses usually have a requirement for student attendance at "residential". However because of the large size of Australia, students can incur large travel costs as well as be inconvenienced by the need to take leave from employment and family. When considering the provision of this essential experience for Introductory microbiology 1A we were faced with the additional problem that this practical component would need to be completed at home.

PAST DEVELOPMENTS

In the last few years at Curtin University we have been involved in the production of a number of teaching and learning developments used by students enrolled in Medical Science and Nursing microbiology units.

Since 1990, distance education students taking microbiology in the degree nursing program have been able to complete a practically orientated science unit without the need to come onto campus. This was facilitated by our development of the first tertiary accredited telecourse in Australia (Fox & Edwards, 1990). The difficulties of providing a safe and pertinent program for this unit were overcome by students attending a two day work-experience session at the nearest accredited microbiology laboratory.

Further developments have included:

- eight computer-assisted-learning modules (CAL) incorporating problem-solving clinical case studies (Edwards & Fox, 1993a; 1993b).
- a video library of demonstration materials and organisms and
- a Learning management test bank for use by nursing and medical science students (Courtney & Edwards, 1993).

Some of these teaching tools were incorporated into an introductory microbiology unit developed for the Open Learning Australia offered in March, 1995. The major problem in developing this unit, as with the telecourse, has been the provision of a practical component which could be safely performed at home.

This paper will discuss some of the issues that had to be faced in the development and adaptation of every day materials and equipment for the unit as well as the health and safety issues.

DEBATABLE ISSUES

There were a number of issues which were discussed before the developmental plan for the unit was finalised. These include:

- the target audience
- costs
- theoretical component delivery options
- the practical component's safety and legal issues.

Target Audience

We knew from OLA literature that the majority of students who enrol in open learning units are 21-35 years of age. We wanted to cater for this group but also develop materials that would attract a broader cross section of the community and have a possible place in the international market. To accomplish this aim we related the program to situations in everyday life, using materials students would be familiar and comfortable with.

Costs

We received from the OLA \$4,700 for the theoretical component and \$5,000 special funds for the setting up of the practical program. There were therefore constraining monetary factors on the design of the unit as well as a short developmental time frame. We felt however, with the materials that we had at our disposal and with thorough planning we would be able to achieve the objectives of the unit.

Theoretical Component Delivery Options

We needed to consider the materials we had already developed. As well, on-campus we were offering an introductory unit in microbiology to first year students in medical science, aquatic science and human biology.

The choices for delivery were:

- print
- television
- video
- audio
- computer assisted-learning

Due to the expense and time commitment needed to develop another video telecourse and CAL programs, and the short development time we had available it was not feasible to go this route again, although TV production in the future has not been ruled out. However, we saw great advantages in including in the study package, clips from the video library as well as making available for sale to students copies of relevant videos from the telecourse and floppy disks containing the computer case studies.

The University of Southern Queensland had previously developed an external microbiology course without hands-on practical work which incorporated audio-tapes and photographs. However, we found this style of delivery did not satisfy our objectives. After much debate we eventually decided to use a print-based medium revolving around a very good commercial text for the delivery of the theoretical component.

Practical Component

We have always believed that hands-on practical experience is an essential requirement for fully understanding the concepts of microbiology. When the telecourse was developed we debated long and hard as to how we would provide this experience. The options available then were:

- residential schools which incur high travel and personal costs for the student (Fox & Edwards, 1990).
- a home based experimental kit which perturbed us due to worries of unsupervised students working with pathogenic organisms and the cost of transporting microscopes and equipment to the student as well as the question of disposal of used materials.
- a two day supervised workshop in the student's nearest country laboratory which was the choice we settled for.

The latter option was a very viable alternative because of the low numbers of students completing the telecourse, the fact that all the hospital scientists in the country laboratories were known to us and all wanted to assist. However when considering the OLA unit we were faced with the possibility of greater student numbers taxing laboratory facilities and organisation. As well, this was to be a general unit in microbiology and there was a need for students to be able to complete all requirements at home.

On further consideration, we decided to reinvestigate the possibility of developing a home experimental kit with many of the materials being available from the local supermarket and which would have direct relevance to the home environment.

Five practicals are now offered in the unit:

- the ubiquitous nature of microorganisms in our environment
- fungal growth conditions
- the fermentative properties of yeast and bacteria in the making of bread, wine and yoghurt
- the control of microbial culture and growth
- examination of urine

Advantages of the Unit Design

- Students are able to cultivate microorganisms from their environment in their own homes. This provides them with tactile, visual and olfactory experiences, so important in microbiology. Although students do not get hands-on experience with microscopes they are still able to see via the video clips necessary microscopic results of their experiments.
- The practicals provide greater experience in some aspects of laboratory experimentation than on-campus students receive. Students must plan the experiment from the directions in the manual and buy the consumables not provided in the practical kit. They observe experiments for longer periods than students on-campus, and need to do more in-depth reading to provide possible explanations for results and sound evidence for their conclusions.

Unit materials

The unit materials consist of:

- **The plan**
which outlines the aims of the unit, how best to make use of the accompanying materials, where the readings for each module are to be found, the assessment, assignment topics, hints on writing and tutor and other resource information available at Curtin.
- **The Guide**
drives the theoretical component which consists of 11 modules spread over the 13 week term. The Guide introduces each module, the corresponding learning objectives and provides information as to where the readings are to be found in the accompanying text.
- **The Reader**
contains additional readings not found in the text. There are *Recommended Readings* where an area is not covered adequately in the text and also a series of Readings for *Interest* which are not examinable but provide interesting asides in the various areas under study.
- **The Practical Manual and Kit**
drives the experimental program. This contains descriptions and aims for each set of experiments. There are a series of questions, observations and conclusions to be completed by the student for each module. These are assessable.

The manual is accompanied by the practical kit which was designed around materials students could find in the home or buy at their local shop it contains minimal equipment and no microorganisms. The kit is contained in a small insulated cooler containing one cold brick. To date it has stood the test of the first mail out through hot weather and to students as far afield as Saudi Arabia.

SAFETY AND LEGAL ISSUES

The development of the practical program generated many questions as to the safety and legal issues of conducting microbial experiments in the home. There were many think tanks revolving around what-if situations:

- What if we provide in-depth directions for all aspects of the practical and the student disregards these and infects themselves?
- Are we as individuals indemnified by the University?
- What if a pet or child eats the experiments?
- Can a bucket of dilute bleach be put down septic tanks without damaging the microbial flora?
- How can plate media be safely and easily disinfected and disposed of?

Overcoming the Problems

We thought it was justifiable to seek a written legal opinion as to our liability. We are indemnified by University should a student seek to sue us, provided we have outlined as far as possible the safety procedures to adhere to.

The content of the practical manual was discussed with numbers of academics and the teenage children of staff members perused it for areas that needed possible further explanation or clarification. There are explicit directions for performing each practical, the handling of materials and cultures and the disposal of materials. We have spent considerable time running each practical under conditions present in the home. Our major headache has been disposal of potentially pathogenic material. We have conducted many in-use tests, using a variety of household disinfectants and chemicals. At all times we have needed to use standardised tests for these procedures and maintain impeccable logs always bearing in mind future legal repercussions.

The fungal practical, in particular, posed many ethical questions as to spore dispersion and possible risk of infection. We eventually designed a wet chamber from a two litre soft drink container which would permit observation of the growing moulds without risk to the student and which could be discarded in the garbage at the end of the experiment.

To date, we have not run into any problems. We remain in close contact with the students through telephone and written evaluations of each practical.

CONCLUSION

Designing a hands-on microbiology unit for use in the home has proven to be an extremely searching exercise and very different to similar exercises for use by on-campus students. At this stage 33 students are enrolled in the unit and to date things are running smoothly.

For the first time in Australia external students are able to complete actual hands-on practical components of microbiology at home without risk to themselves, family and friends.

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WHO WILL BELL THE CAT?
STORY TELLING TECHNIQUES FOR PEOPLE WHO WORK WITH
PEOPLE IN ORGANISATIONS

INTRODUCTION

The purpose of this paper is to illustrate how stories may be used by facilitators/teachers and how they can use them to elicit stories from participants. The purpose of this paper is to explain why we use of story telling in our work. Its relevance to teaching and organisations; illustrate various story telling techniques; tell favourite stories and why we use them; describe exercises for facilitators to introduce participants to story telling and draw conclusions and make recommendations.

Full version including nine stories from different countries is available from Chris Hogan.

REASONS WHY WE USE STORYTELLING IN OUR TEACHING AND WORK WITH ORGANISATIONS

Why tell stories? People like them. They like to tell their own stories and they like to listen to them. But, we don't all have the same levels of skill to tell or listen to them. Story telling is not only a combination of skills, but also an art form. Stories take us back to childhood. The traditional children's stories are related to the world and help them understand life through the adventures of archetypal figures, for example the hero, the martyr, the wanderer etc as described by Pearson (1989).

In organisations and society stories play a dual role, they act as powerful directives for member's behaviour, and they can also teach specific lessons. They are the "glue" that holds the culture of an organisation together. The stories provide a blueprint for "the way we are in this place", how we deal with things here, what is "ok" and "not ok". They articulate the way in which the organisation is special, different from other organisations. These stories are for the most part unconscious. At a conscious level, stories can embed values, articulate vision and give meaning to events.

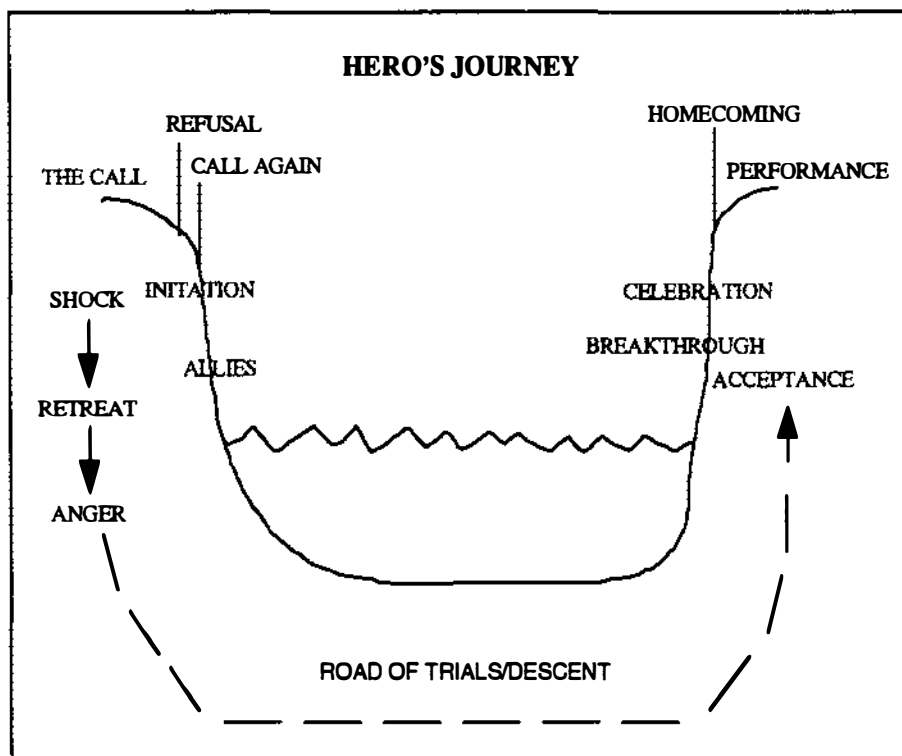
Affective Domain

Hogan teaches story telling techniques to her Graduate Diploma in Human Resource Development students. Story telling and listening engage everyone in the affective domain. Many learning situations involve participants in cold, analytical, left brain activities. Story telling evokes a different response from participants in workshops when compared to more analytical approaches. For example, in a workshop to facilitate the development of a policy on the handling of violence in a hospital Hogan sought to bring the rationale within the policy to life. She asked the group "Are there any stories you have got of ways in which violence occurred and was dealt with well and not so well?" The results were stories told from the heart with great feeling and emotion for the perpetrators, victims and onlookers. As one story was told people "hooked in" their experiences. When she suggested that we stopped for lunch there was a consensus to continue..."just a bit longer as this is so interesting".

Organisational life and Empowerment

Just as individuals are products of their stories, so are organisations. Maintenance of stories helps to add stability and purpose to departments and organisations. Yet in these days of "turbulence", "restructuring" and "downsizing", stories are lost and/or different stories are told. The major stories circulated at this time are stories of decline, injustice and despair. Many individuals are left alienated, depressed, even ill. Management frequently dismiss or repress these stories, there is no opportunity for them to be told.

Working in organisations, Finlay uses "The Hero's Journey" to enhance the empowerment of others so that they can see their situation in a different way, as an archetypal journey. (Archetypes are deep and abiding patterns in the human psyche that remain powerful and present over time) Joseph Campbell first wrote about the Hero's journey in "The Hero With a Thousand Faces" (1973). He describes the stages of the universal journey and the challenges and dangers that faced the hero at each stage. The hero is the person who "takes off on a series of adventures beyond the ordinary, either to recover what has been lost, or to discover some life giving elixir" See Figure 1 below



The stages are:

- innocence, where all is well and stable
- the call, where someone is called to be more than he/she currently is
- the refusal
- the second call, often comes with a "push" eg a lost job, an accident
- initiation, the acquiring of the skills to undertake the journey
- allies, the hero/heroine doesn't go it alone. Allies can be human, technical, spiritual
- the road of trials/the descent. The obstacles to be overcome
- breakthrough, the moment when the change becomes conscious/clear. The hero/heroine has "come through"
- celebration
- homecoming: the hero/heroine returns changed and/or with a gift for the tribe.

Working with the journey, Finlay tells the story of "Star Wars", a modern myth, a story most people are familiar with and a wonderful example of the mythical journey. After the story, Finlay invites people to tell personal stories. In describing, for example, the role of Ben Obi Wan Kenobi she asks people to tell a story about the people in their lives who played the role of helpers/mentors. What was the gift they gave? What meaning does this have for the present situation? This questioning is repeated at various stages.

Finlay also uses the story of local/national heroes/heroines such as the late Fred Hollows. The process places individual experience in a larger context, work lives are seen as heroic, each person a hero in their own story. It gives meaning to the changes being experienced and strategies to cope with them.

EXERCISES IN STORY TELLING TECHNIQUES

a. Warm up

This is a non threatening and enjoyable warm up for people for whom the story process is new. Choose a partner and decide who will be the story teller first and who will be the "giver of words". The giver of words asks the storyteller "Tell me a story about.....". The storyteller begins, the other puts words into the story at a reasonable pace. The words can support or challenge the storyline and the storyteller must react and adjust the story accordingly. After 3 minutes, partners change roles and repeat the process.

During the reflection time the facilitator asks "What was most difficult part of the exercise?" "Why?" "Who supported, who challenged?" "How was that?"

b. Retelling

This activity is useful in developing active listening, and a storytelling ability in the participants. Retelling in threes is less threatening for beginners. One person tells a story, the others listen for the content and the feeling. When the story is finished, the two listeners stand, link arms and jointly retell the story. Each of the group tells and retells a story.

In the de-briefing the facilitator asks "What was it like to have your story told?", "What was it like listening to a story knowing that you were going to have to repeat it next?"

c. Surfacing the Culture of the Organisation

Close your eyes, as you think of your organisation what image arises? Is it an animal, an object, a colour? Draw the image. Find a partner, discuss your image and how it reflects the organisation as you see it.

The facilitator debriefs this exercise by asking individuals to show and explain their drawings. If the participants are from the same organisation, commonalities of images may occur. Perceptual gaps may occur between people from different levels of the organisation. Individuals often want to tell the story behind the image drawn.

d. Creating the myth

Work with the image, the feelings that the image engenders. Decide on the time ie present, past, future. What is the landscape, how does it reflect the mood, feeling? Who are the characters ie the heroes, villains, magicians. Use "story" language. Remember that a story has a beginning, a middle and an end, and that the ends aren't *always* tidy. Begin with "once upon a time" or something similar.

CONCLUSIONS AND RECOMMENDATIONS

Story telling is an underestimated, but powerful teaching-learning tool. Story telling techniques can be learnt and practised by anyone. They are free in the monetary sense but more importantly they liberate the mind. Reason and Hawkins (1988) have explored the use of story telling within the context of qualitative research methods and co-operative inquiry. This is an area that the authors believe is well worth pursuing and will do so at a later date.

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A CRITICAL INCIDENT: REFLECTING ON AN EVALUATION REPORT

ABSTRACT

"Interpretation is important because we act according to what we think things mean" (Tripp, 1993). This paper concerns the questioning of reported events and issues which led to the production of an evaluation paper on teaching science at a distance. Rereading entries in a professional journal written during and after the research process, alongside revisiting data collected from over 80 individual interviews, has led to a new interpretation and has raised a number of questions regarding the influence of various stakeholders involved in the research project.

INTRODUCTION

A critical incident "tends to interrupt or bring into focus the taken for granted ways of thinking and doing and valuing, theorising and writing." (Brennon and Green, 1993). It's a moment that sparks perhaps a deconstruction effect - a moment that pulls apart that 'normal' or 'natural' approach to doing something. An incident can appear "to be 'typical' rather than 'critical' at first sight, but (is) rendered critical through analysis" (Tripp, 1993).

The critical incident described in this paper occurred following what Measor (1985) describes as an 'intrinsic ... mid career move'. Or, more accurately, a mid career opportunity which arose during an Outside Studies Program (OSP) at the Open University's Institute of Educational Technology (IET), UK.

THE CRITICAL INCIDENT

Based on research conducted at the Open University, I wrote an evaluation report (Fox, 1994), on the home experiment kit (HEK) which offered practical and experimental activities to first year university students, studying science at a distance.

Rereading the evaluation report and raw data, several months after completing it, I came across a number of issues which at the time of doing the research and writing it up, I had either deliberately or subconsciously ignored. In part, I feel this was due to my attempt to come up with a clear, decisive report, which steered me to abandon various approaches to writing as well as disregarding many significant chunks of information that did not neatly fit into the report narrative I had ultimately chosen.

'The very language we use creates frames within which to realise knowledge.' (Walker 1992). In the introductory section of the report I had used the words 'researcher' to describe myself and 'informant' to describe those with whom I had discussions. In the context of my report, I *now* consider these terms were loaded with a meaning and a bias that did not accurately reflect the way the investigations were carried out.

These thoughts on the selection and use of words has lead me to question a number of other stances I took in the writing up stage of the report that at the time I saw as 'normal' or 'natural'.

FIRST IMPRESSIONS

On the first day I arrived at the Open University, I was given a letter from the Deputy Director, IET, in which he proposed that I become involved in evaluating the role of the home experiment kit in an Open University course.

At first, I saw this request for involvement in an evaluation study as something that would get in the way of the main task I had set myself, in that it would restrict the time I had to investigate more broadly, Open University courses and courseware and whether the Open University materials and delivery strategies were used in other UK higher education institutions.

I felt too that the Open University was keen to get its 'pound of flesh' for granting my attachment and I sensed that the IET staff were in general not overly enthusiastic about receiving visiting lecturers. An extract from my journal describes my initial perceptions:

...with tighter budgets and less time to chew the fat, visitors may be considered pests. They come here, soak up the hospitality, resources, staff time and do little or nothing in return.

....There's no real space anymore for visitors. They have to share existing staff offices, and this in itself can be an embarrassment. Yesterday, for example, Derek, whose office I'm sharing, had to turf me out in the afternoon, as he had a counselling session. I then had to find another office for the rest of the day. But there is much innovation going on here that I hope to tap in on. I've sent some, hopefully friendly sounding messages through E-mail as a soft introduction (hopefully intimating that I won't be expecting too much of their time) and intend to follow up early next week with a phone call. Phone calls are very hit and miss since in general academic staff aren't at their desks or aren't in at all: rather, they work from home. However, I hope people read their E-mail!

Sample E-mail reply re my request to meet people.

Thank you for your message. I am very sorry that over the next two months I have wall-to-wall visits and meetings, and no spare time for such luxuries as talking to an interesting and experienced visitor. That is the nightmare of current academic life. I do apologise. The best I can suggest is to look at the papers in the PLUM and CITE collections that are relevant..... If you are still around in September, I look forward to meeting you then.

D...

I felt on reflection that the HEK project could work to great advantage as it would give me access to people, both staff and students I would have no chance of meeting without such an Open University focused task. I therefore decided to accept the project.

WRITING FOR A PARTICULAR AUDIENCE

I was conscious of wanting to produce a report that was, as I saw it, acceptable to the Open University academic community. I therefore modelled the report rhetoric on other Open University reports I had read.

I was also conscious of being an outsider, who was seen by certain key academic staff at the Open University, as someone who would be able to produce a concise, relatively unbiased evaluation report with a clear list of recommendations. I note in my journal:

.....I was asked to include a summary page of recommendations and to keep the report short and clear. The report clients wanted a report to help them make decisions and that they could use as ammunition for supporting their arguments.

At the point of completing the investigation and starting to write up the report, I had no clear set of recommendations or statements about the role of the HEK. In fact I felt, as Hammersley put it, that the research study 'was a voyage of discovery' and 'much of the time was spent at sea' (1984). I felt I could only sensibly report on a variety of opinions from those I had spoken to and to include my own opinions too. In fact while I was involved in the investigations, I kept changing my opinions and this I've noted in my journal.

Changing directions and positions

I started out looking at the HEK to see if there was something that could be done to make the kit more efficient. Perhaps more condensed. There must be something in there that can be taken out, changed to some other technology or even supplemented by an alternative delivery. But I always envisaged that the kit would still be there: still be in existence. Now I'm not sure it can stay in any form. I'll have to see what Ruth thinks when I go down to Bristol tomorrow. Why can't ordinary household goods and everyday articles and phenomena replace the traditional chemistry kit? There's chemicals in the home and by using everyday goods, students would become less daunted by experimenting with familiar items. It would also bypass any health and safety rules and restrictions with taking the HEK across international borders and make the course perhaps more real, by using everyday things.

Doing interviews

I'm a bit like a ping-pong ball, going from one side to the other, depending on who I talk to. Having spoken to Ruth, Alan and Phil in Bristol, I'm no longer totally convinced that Tim's vision of the kit being entirely removed is the right choice. These are the people who teach the course to the students in the regions. They're not at Milton Keynes developing courses, researching, writing learned papers..... they .. *teach* the students. Is it really realistic to expect computers to completely replace the kit? I'll need to listen to the tape recording of the interviews again to get some detailed arguments from the other side. It seems it may be worth my while in arranging interviews with other key people -stakeholders, I've already spoken too. The topics I want to cover in the interviews are changing and I'd be interested in re-visiting some earlier discussed areas.

In the end, following the submission of a first draft report, it was recommended to me that I re-write the report, making it shorter, more decisive with an action plan of recommendations. I therefore reread my data findings and very selectively took out parts of recorded conversations and other data that did not reinforce this clearer more black and white report style I had been asked to adopt. In a journal entry, I start to question my approach by comparing what I did with the criticisms levelled at Mead.

An article about Margaret Mead's book, 'Coming of age' has given me further food for thought in this critical incident activity of revisiting the HEK evaluation study.

How honest were Mead's informants? Was Mead as Freeman suggests deliberately duped by Samoan adolescents into believing Samoans readily accepted the idea of free love? Was I, duped too in part, strongly influenced by senior staff at Milton Keynes?

Was Mead's 9 month visit too short a period to really get to grips with Samoan society? And was my 3 months investigation into HEK equally too short to be very meaningful?

Did Mead impose 'her ideology on the evidence' and did I impose mine on the HEK evaluation? Were my interests in the use of alternative delivery strategies compared to the use of conventional ways of teaching leading me to favour reviewing whether individual activities within the existing HEK could be carried out through the use of other instructional strategies and media?

Was Mead too narrowly focused (too soon) in her topic/problem and was I? And was I like Mead even admits of her anthropological tutor, 'always tailoring a piece of research to the exigencies of theoretical priorities?'

Robin Fox, an anthropologist quoted Mead as having said of her tutor, 'He told us what to look for and we went and found it.' Having been told what to say by at least one key Open University figure that the new course had to have a PC incorporated Could I have followed along the same path as Mead?

Mead wrote her study based on interviews with 68 girls (no males). Most of her information came from 25 girls, who came to visit her each day for questioning in her office. Was the sample too small to be representative? Did I have too many interviews of not enough depth to get significant differences out of individuals and was there insufficient grounds for me to create generalisations?

Freeman's strongest criticism is that Mead's 'falsifications of Samoan life were not accidents but the result of imposing her ideology on the evidence.'

Have I, in fact, imposed mine on the report? So what's important is to make the nature of the activity and its ambiguities and contradictions as explicit as possible and to state my position as clearly as I can from where I stand at a particular point in time.

John Leo (1993) says 'anthropology is a subjective enterprise with the observer drawing unity out of confusion, by imposing patterns that are often arbitrary'. Have I done the same with my burning need to come up with a set of neat recommendations?

And finally, as Leo says 'some natives cheerfully tell fieldworkers whatever they want to hear'.

Were my interviewees telling *me* what I wanted to hear? Certainly, at times, I'm sure they were and I encouraged them to do so by: leading questions, nods of encouragement of statements I liked or wanted to hear. In fact it is seems that I adopted several strategies to achieve my unconscious aims. Maybe next time, it would be interesting to video record *myself* interviewing.

OWN INTERESTS

My interests in the use of alternative delivery strategies to established ways of teaching led me to favour reviewing whether individual activities within the existing HEK could be carried out through the use of other instructional strategies and media. This interest influenced doing the research and my recommendations to the Open University Science Faculty, Planning Committee: a key targeted client for this research project. In a journal entry, I start to discuss this point.

..... with some time lapsing after actually doing and writing up the research, it's interesting to reflect on what's happened or rather, my interpretations today of what's happened. I'm not sure how 'honest' I was in the reporting of the 'findings'. I had my own agenda, which was favouring finding suitable alternatives to the present way of offering practical and experimental work through the HEK. I don't think I was 'hygienic' in the sense that Ann Oakley (1986) describes in her chapter on interviewing women. If I was to write this report again, I know it would be quite different.....

..... Rob Walker's comment (1992) that writing about the past, one does with very much the issues of the present in mind. I'd agree with this totally. And it's not restricted to writing but to all life's events. David Hamilton (1992) went on to say 'you can always go on writing history of the same period, because your questions are always changing.'

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ATTITUDES AND ACCESS TO TECHNOLOGY IN DISTANCE EDUCATION

ABSTRACT

There has been a great increase in the technologies available in the higher education sector in recent years. The fact that the technology is available however, does not necessarily imply that it should be used without reference to students' needs and expectations.

Using a sample of Curtin University distance education students, the project aimed to determine student perceptions of the use of technology in distance education in terms of their access, perceived usefulness and potential difficulties with use.

Results indicate that there are differences in perceptions of and access to technology for different groups of students on the basis of age, gender and discipline differences. In addition, it appears that for rural and remote students in particular, the focus should be on improving communication between the student, the unit controller and the institution, and increasing the quality of the learning experience for students by using current, commonly available technology.

OVERVIEW

In recent years, the Commonwealth government has severely limited systematic growth of higher education. In a recent discussion paper (National Board of Employment Education and Training (NBEET), 1994) it was identified that any future growth in this sector, would probably be through alternative modes (read technologically based) of delivery.

While the philosophical, pedagogical and political arguments surrounding this paradigm shift are being hotly debated, we believed one of the basic questions was being ignored; ie. what access do current distance education students have to the various types of technology which are touted for the future delivery of their university studies? The secondary issue of their perceptions of this technology and its uses also needed to be addressed.

Worldwide, there has been a great deal of literature written on the issue of access to and delivery of technology, with a literature review by Bridge and Salt in 1992 uncovering 1248 entries on the subject since 1985. Many recent papers question whether well-intentioned efforts to improve access and participation through technological innovation, is creating more distance rather than less (eg. Kirkup et al, 1994; Harry et al; Dillon & Blanchard, 1992; Campion, 1991). Wells (1993) cautions that institutions developing computer mediated communication (CMC) courses should ensure "that this democratic medium does not become an elitist one", by ignoring issues of gender, minority groups and rural access. A second area eliciting comment in the literature is the need for course design in distance education to be educationally, rather than technologically driven (eg. Bates, 1991; Ortner, 1992).

This paper outlines some of the findings of our investigation¹ of attitudes and access to technology for a population of distance education students. The study surveyed Curtin University of Technology students enrolled in at least one 'distance education' provided unit of study in semester 1, 1993. Of the questionnaires mailed to students in the sample (1854), 887 (48%) were returned. This return rate

was considered reliable and in comparing the broad education enrolment profile of those who returned the surveys, it was felt to be a representative sample of Curtin distance education students.

INSTRUMENT

The questionnaire comprised four sections; three addressing issues relating to specified educational technology and one soliciting demographic data. In addition, an open-ended question on the use of technology was included. The first issue, which is the focus of this paper, is student access to 24 different types of hardware which may be used within distance context. Because of the potential for the use of technology, we believed it was important for the university to know to which technologies the students have greatest access, before rather than after, committing large sums of money to courseware development.

RESULTS AND DISCUSSION

Figure 1 shows the levels of student access (with the categories and frequent access amalgamated) to a range of technologies for Western Australian students. The graph of percentages of the responses shows three levels of access (not to be confused with ownership); those above 80%; those between 70% and 20% and those less than 20%. As might be expected the high access hardware items include telephone, AM radio, audio tape, television and video recorders.

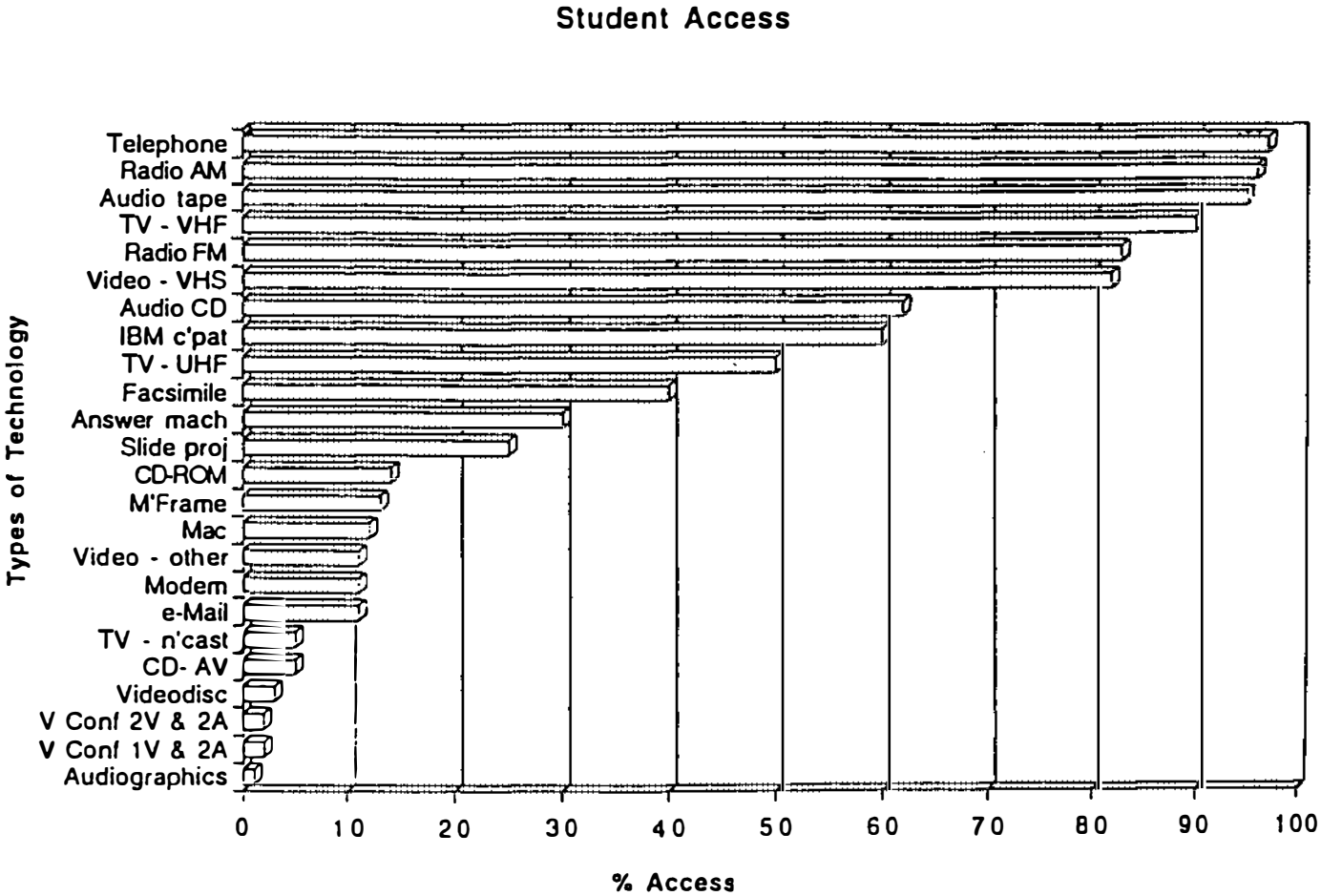


Figure 1

When cross tabulations were examined, differences in the levels of access to the technologies across the Western Australian regions (metropolitan, rural and remote), sex, age and Division (ie. discipline) were apparent. In general the 30 to 39 years age group tended to have higher levels of full/frequent access than other age groups eg. significant differences for videos³, answering machines and Macintosh computers. The fact that as age increased access to slide projector increased while access to an audio CD decreased, may be seen as anecdotal evidence for the way technology enters the community. In general males have better access to most types of hardware significantly, slides, IBM compatible computers, modems, fax, as well as e-mail/CMC infrastructure.

Students from different disciplines also had different levels of access to the range of technologies identified in the questionnaire. It was not surprising that students in the Division of Science and Engineering had significantly greater access to slides and IBM compatible computers than students in other division, particularly those in the social and health sciences. Science and engineering students, with business students, also had significantly greater access to modems. Business students were in the highest access group for E-Mail/CMC and fax, although they had significantly lower levels of access to CD-ROMS, compared with high levels for those in the social sciences. Perceived, rather than actual potential access may be a complicating factor in this analysis, in that for example business students are less likely to need access to a CD-ROM for literature searches compared with those in the social sciences, and thus may make less effort to find an access point. Distance students of the Muresk Institute of Agriculture and the West Australian School of Mines (WASM), which are both rural branch campuses of Curtin, had amongst the lowest levels of access to the majority technologies identified in the questionnaire. This may be explained as more a factor of their rural location, and the remote employment opportunities for this group, rather than the nature of the discipline *per se*.

As indicated, metropolitan students tended to have higher levels of full/frequent access to hardware than those from rural and remote areas. The exceptions were modem and fax, where rural and remote students had significantly higher access. This result becomes more interesting when viewed in the light of students comments. The importance of access as an issue for students was reinforced by the fact that 45% of those that responded to the open ended question regarding the most difficult thing about using technology, mention access as a major issue, nearly double the number of comments elicited for any other issue. The 'Access' group of responses included not only simple access to hardware and software, but also the question of access outside normal working hours and the time taken in travelling to get the access.

CONCLUSIONS

From the analysis of the data so far, patterns of attitudes and access to technology for Curtin University distance education students are emerging.

- Access to technology

The results so far tend to reinforce the expectation that different groups of students have different levels of access to technology. The tendency for reduced levels of access for females and for those in rural and remote locations are important parameters to pursue.

- Communication technology

For the majority of rural and remote students (with the possible exception of business students) we believe that their perception is that until technology can become more reliable, more affordable and most importantly more accessible, the focus should be on improving communication between the student, the unit controller and the institution, and increasing the quality of the learning experience for students by using current, commonly available technology such as the telephone, audio and video recorders and faxes.

The results of the completed survey should help to provide a useful database on the attitudes and access to technology for this population of Curtin distance education students. This information can be used to make informed decisions and choices in the development of technologically based courseware. It will also be very important to ensure that in an effort to improve student access to higher education through the use of technology, that institutions do not create a new elite.

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FOOTNOTES

- 1 This project was undertaken with the support of the Teaching Learning Group, Curtin University of Technology and funding from Commonwealth Quality Grant monies to Curtin University.
- 3 Pearson chi2 (For levels of significance see Appendix 1)

Statistically Significant Cross-Tabulations

	Division			Age			Gender			Region		
	Chi ²	DF	Sig p <	Chi ²	DF	Sig p <	Chi ²	DF	Sig p <	Chi ²	DF	Sig p <
Videotape				19.0	6	0.01						
IBM Computer	19.1	8	0.05				15.1	4	0.01			
Mac Computer				12.4	6	0.05						
E-Mail/CMC	15.7	8	0.05				20.8	4	0.01			
CD-Rom	15.6	8	0.05									
Slide projector	22.9	8	0.01	24.9	6	0.01	13.6	4	0.01			
Audio CD				32.7	6	0.01						
Fax	50.0	8	0.01				46.1	4	0.01	63.9	4	0.01
Modems	40.6	8	0.01				22.5	4	0.01	9.4	4	0.05
Answering mach				16.7	6	0.01						

Table 1: Statistically Significant Chi2 values for Access x Division/Age/Gender/Region

**AN EDUCATIONIST'S PARADIGM FOR WHAT AND HOW WE LEARN:
REDISCOVERING A TOUCHSTONE**

ABSTRACT

The objective is to revitalise an old learning and an old touchstone by looking inside the 'black box' of being human. Learning is fundamental to both education and psychology. There is, however, an absence of unifying theory. Arguably this absence of an integrating and integrated framework has led to a fragmentation of purpose and a distortion of experience. The purpose of this paper is to explore (a) a poorly known Spontaneity Theory of Learning (i.e., the How question) and (b) a poorly understood theory of Being (i.e., the What question). A paradigm is proposed. The role of the teacher is used as an exemplar. The utility of this work for people who work with people (e.g., is teachers) is discussed).

INTRODUCTION

There are two models of human existence that are our current theories of knowing and knowledge. Judaic and Christian knowing and knowledge remains confused in modern life. This duality can be fragmenting and integrating. The term *Christ* merely means teacher and so has an obvious relevance. The Trinity, a personality theory, remains a mystery. I am excited by its relationship to the poorly known Spontaneity Theory of Learning (Moreno, 1978, p.538). My purpose here is to revitalise this paradigmatic personality theory and to promote spontaneity as a useful educational paradigm.

In our current cultural malaise there is an absence of integration. An absence of a unifying point of view provided the impetus to two well-known cognitive and affective taxonomies of educational objectives by Bloom (1956) and Krathwohl, Bloom, and Masia (1964). Education in their review is: fragmenting, distorting, arbitrary, doctrinaire, and having only a semblance of order. There is no paradigm that unifies education.

The same rationale that divides educational experience into affective, cognitive and behavioural components is commonly used in psychology. The DSM-IV (American Psychiatric Association, 1994) is a main taxonomy of psychological disorders in its fourth major revision. There is no cogent and universal model of psychological disorder and no paradigm that unifies psychology.

Judaic and Christian models underlie Modern and Post-Modern science. Modern education assumes that experience is divisible. How can experience be used as a unifying rationale? What is the unit of measurement? These paradigmatic questions are addressed from a Post-Modernist point of view that life is purposeful in Becoming and Being.

BECOMING: SPONTANEITY THEORY OF LEARNING

Moreno saw the role as the act of the person in the moment that they respond. The person enters the unconscious - feelings, thoughts and actions- through the role. The role identifies the person's being (e.g., being a teacher). It is this (psychosocial) role that is significant in life, and so also in learning, training, education and teaching.

Mead (1934) took the experienced role taker as his model whereas Moreno observed the process of how a role is formed (Becoming). Both use role, however, this disguises their different role constructs (i.e., social and psychosocial) and the different social and psychosocial realities constructed by Modern and Post-Modern science.

Prior to spontaneity learning there is a First Universe of "co-being" (Moreno, 1980, p.61). When this mother-infant bonding is complete there is a readiness for combinatory acts that prepare for later spontaneity learning. Moreno identified two phases in this Second Universe: (a) the first phase of creativity and (b) the second phase of spontaneity. Figure 1 shows the process of role formation in spontaneity learning.

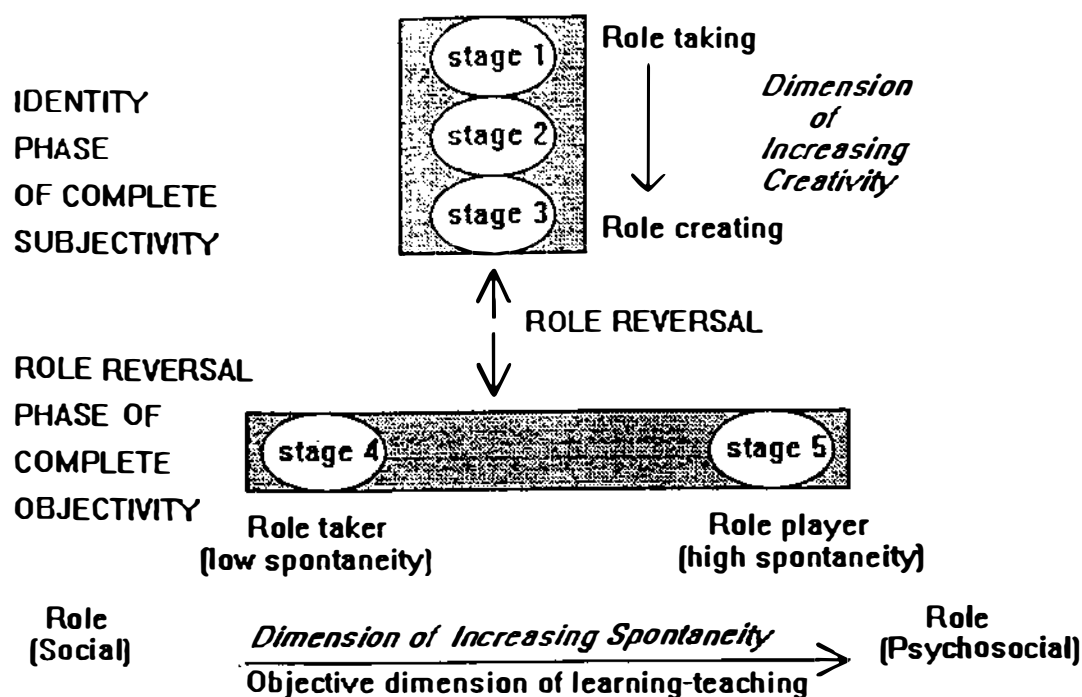


Figure 1. Dr. J. L. Moreno's (1889-1974) Spontaneity Theory of Learning

The role emerges from the action of spontaneity on creativity. Creativity becomes spontaneous play, just as the infant grows and role reverses to feed and care for the next generation in child's play and later as a parent to an infant. Compare your practised driving skills with your learning to drive a car. Compare, for example, a mother with her first, second, and third neonates. Initially a role taker and then with practice and with wit, a role player learning to be a father, a lawyer, a psychologist, a teacher, a nurse.

BEING: A PERSONALITY THEORY FOR PSYCHOLOGY

Moreno has identified two universes: a First Universe of the neonate and a Second Universe following the split of personality with roles having their dual origin in fantasy (psychodramatic role) and reality (social role). In Christian theology there is a Third Universe as Being emerges in consciousness from this redeeming action of psychosocial relationship. This may not occur and predicts psychopathology in general and especially anxiety. This hypothesis has been empirically tested and convincingly supported (Franklin, 1988).

This Third Universe became incarnate in Jesus of Nazareth as he discovered that his being (i.e., a teacher) emerged with his increasing spirit of relatedness. This relatedness was between Christ's creator role (The Father Who is in Heaven) and his spontaneity in his social role (The Son of the Father). Being emerged from this role reversing metaphysical relationship within his personality. The infantile breach that originally and dualistically split his fantasy and reality roles is redeemed in the integration of role. He Becomes-a-teacher actualised in his Being-a-teacher in a conscious psychosocial reality.

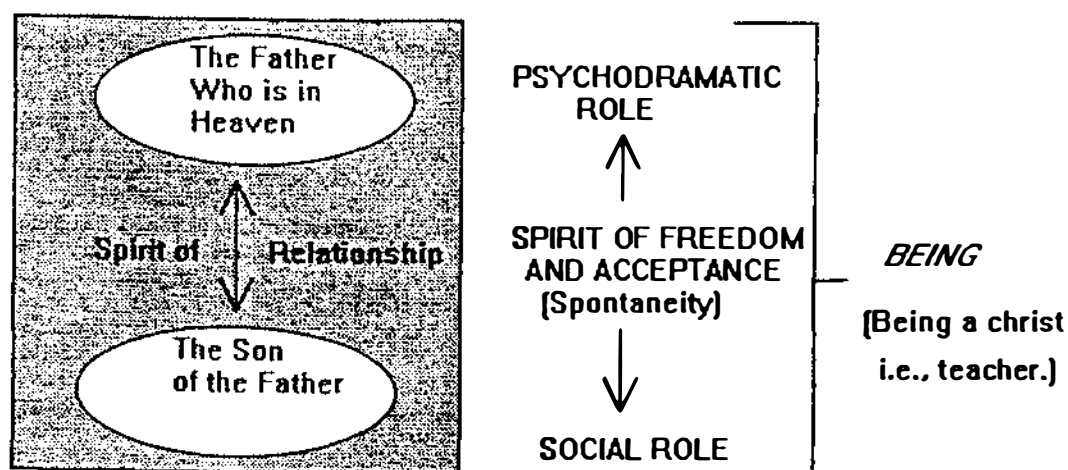


Figure 2. A model of psychosocial Being showing the spontaneous spirit of relationship between his metaphysical fantasy and reality roles.

Role or psychosocial identity- being a teacher, a lawyer, a mother, a nurse - is a relatedness of the learner-teacher phases of spontaneity learning. Role reversal is the expression of relationship. Originating in creativity the learner has now, with role reversal, become the teacher transformed in spontaneity. In this individuated Third Universe of Being there is a reconciliation within ourself of our private nature (psychodramatic role) and our collective nurture (social role). Christian theology is unified, a theory of role, a role of theory and a psychological paradigm. Psychology and education have a paradigm in this personality theory of Becoming and Being.

TOWARDS A FRAMEWORK OF EDUCATIONAL UTILITY

Figure 3 shows two models of education. In a role taking model of education (stage 4) defining the time, territory and the task provides boundaries and this defines the educational work. In a role playing model of education (stage 5) how the task is done within these boundaries is the educational work. The stage 4 model asks WHAT and is a cognitive model of education. The stage 5 model asks HOW and is a skills model.

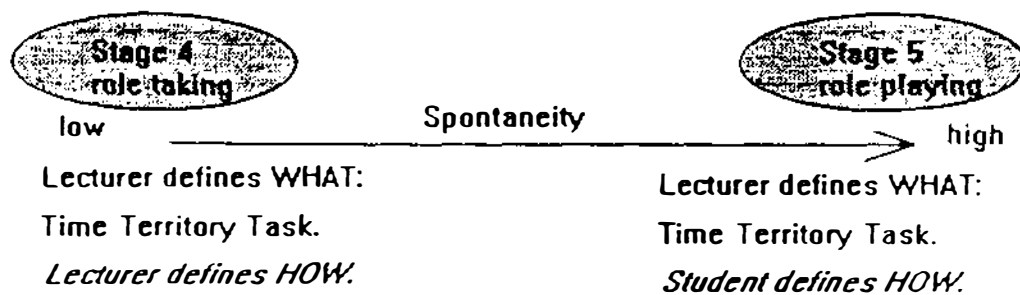


Figure 3. Developing skills using the spontaneity principle

Figure 4 shows a WHO model of education. In this identity formation model both questions of what and how become permeable to both student and lecturer.

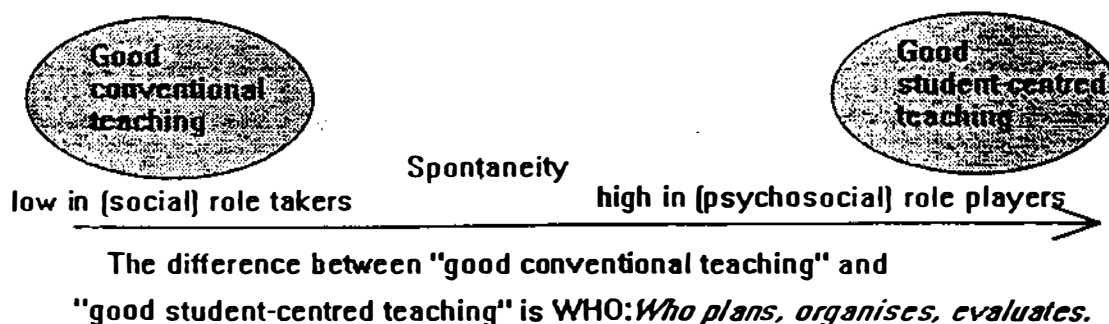


Figure 4. Education for roles. (After Dr. D. Brandes, 1994.)

Role taking frequently remains a valued end-state of existence. Learners willing to become role players must necessarily become more conscious. Initially this increased awareness may result in some social anxiety. This model provides a method of resolution to the dilemma of education (i.e., power and authority).

CONCLUSION

Education requires a renaissance. Education and psychology are currently non paradigmatic. These paradigms provide explicit rationales to Becoming and Being as purposeful points of view in a Third Universe of Post-Modern human experience. I recommend their fuller application as we approach the third millennium.

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QUESTIONING QUALITY IN EDUCATION: EXPLORING DIFFERENT PERSPECTIVES

ABSTRACT

There are many ways of defining quality which reflect different assumptions people make about the role of higher education in our society and their own values, needs and backgrounds. In addition there have been many learned debates conducted in a range of higher education contexts, which have offered varied perspectives on the topic. This workshop provided participants with an opportunity to share experiences and explore the meanings of quality in teaching and learning. In reflecting on a fundamental dilemma in teaching and learning in higher education the workshop addressed four questions: - What is quality? How do we achieve it? What are the issues which surround quality? How might these issues be addressed?

The workshop commenced with an invitation to participants to identify past perceptions of good and bad learning experiences. This was followed by a role play involving two students and two staff members discussing students concerns about forthcoming assignments and exam. This highlighted differing styles and expectations from the formal and structured to the more open and flexible. Participants then engaged in group discussion to address the four questions concerning quality. What eventuated paralleled the role play in that it was agreed that the process of discussion was probably more important than any outcomes or answers to the questions. In addressing the first question it was agreed that quality means different things to different people and involves multiple competing perspectives. The source of the drive for the pursuit of quality was debated and image, marketing, political and financial factors were identified. Did universities wish to be seen to be achieving quality or was quality something which was not so easily reducible to finite performance measures? A notion of quality as fitness for purpose was explored. It was agreed that many of the issues revolved around the multiplicity of stakeholders involved and secondary to this was a need to address the problem of the language of quality to effect more meaningful dialogue between stakeholders. Dialogue about quality was seen as essential to its achievement. Finally it was agreed that the pursuit of quality is an abiding value and that quality is the responsibility of everyone at the point of delivery for which they are accountable.

The discussion was followed by a review of recent literature and the workshop concluded with participants identifying personal gains from their involvement.

LITERATURE REVIEW

In our presentation we would like to bring together some of the themes which have emerged from our search of the recent literature on quality in teaching and learning. We have attempted to address the questions set in this workshop and analysed the material from a systems perspective. We will present our findings from the perspective of the student and learner and the teacher or facilitator of learning.

WHAT IS QUALITY LEARNING?

Nightingale and O'Neil (1994) indicate that there are 5 different ways of defining quality, that is:

quality=high standards (can be high marks;high ethical standards)

quality linked to consistency and zero defects (a standard approach to curriculum, content and processing)

quality related to fitness for the purpose

quality=value for money

quality as a transformative process

The authors indicate that there are problems with four of the five definitions, which could easily be applied to a production line environment but have limited relevance to higher education. A different perspective on quality is provided by Ramsden (1987) who states that:

'Quality' clearly implies a respect for wholeness and breadth, a concern for the process of thinking and acting as well as the products. It is not reducible to 'performance indicators' or efficiency.

Nightingale and O'Neil (1994) suggest that in looking for a meaningful definition of quality in learning in higher education, we should be looking at education as a transformative process involving a change in roles of the student and the teacher, and geared to an assumption of quality being part of a continuous improvement process.

A student perspective on conditions that promote quality is provided by Ingrid Moses, a Queensland tertiary education researcher. She found that the strengths students identified in lecturers they rated as superior teachers were:

- organisation of class sessions to ensure maximum learning
- clear explanations
- stimulation of student interest
- the ability to motivate students to work hard, and
- a positive attitude towards students

Moses concluded that students' perceptions of quality teaching can be represented in the formula:

Competence in subject matter
+ Communication skills
+ Commitment to facilitating student learning
+ Concern for individual students
= superior teaching

There is some overlap between these aspects of student-defined quality and those identified by Broder and Dorfman (1994). In the course of looking at ways of improving the statistical validity of information derived from student evaluations of teachers and courses, they found that some key attributes were crucial to students' judgements of quality.

In ratings of teaching the important attributes identified by students were:

- enthusiasm for teaching
- teachers' knowledge of their subject
- tying information together, and
- ability to stimulate thinking

In their evaluations of courses:

- the amount of new knowledge gained
- tying information together, and
- amount of subject matter

were important to students.

Whichever perspective we take in judging quality, it would be generally agreed that quality relates to the widely agreed purpose of higher education. According to Nightingale and O'Neil (1994), the purpose is to foster higher order intellectual capabilities in students, no matter who they are and at what stage in their studies.

FACTORS WHICH IMPACT ON QUALITY IN HIGHER EDUCATION

What, then, may be some of the factors that impact on the achievement of outcomes and processes judged as quality in higher education? One can group the factors into areas relating to the institutional and community contexts of higher education; the conditions and processes which facilitate or inhibit the achievement of quality. In terms of the institutional and community contexts we can examine factors such as the expectations which the community, students and teachers hold about the purpose of higher education, the role of the teacher and the learner and the best way to achieve quality outcomes.

In the wider community there is a perception that university lecturers are "experts"; professional repositories of complex knowledge who are skilled in the transmission of this knowledge to student recipients.

At this forum last year, Mark Garner (1994) explained that the idea of giving control of learning to students - the sort of student empowerment that is often espoused at conferences such as this - results in:

"a mismatch between excellent sentiments and actuality because, although we would love to be able to translate this view into our practice, it is very hard to do" (p. 129).

One of the reasons that this giving over of control is so difficult is that it goes against the cultural expectation of the teacher's role.

Ramsden (1992) indicates that teachers may see themselves as transmitters of information, thereby reflecting the wider expectation, as opposed to that of transformers of students' learning. The teacher is portrayed in one of three roles - the manager of the learning environment, the facilitator of learning, and the spoon-feeder role. Taylor (1994) indicates, however, that teachers hold divergent personal models of their role which are difficult to categorise and transform, and which do not integrate well with the packaged approach to staff development adopted by many educational development units in higher education.

The model(s) out of which the teacher operates, will have implications for the learning experiences which proceed in the classroom. Ramsden (1992) indicates that deep, surface, and achievement-oriented learning styles in students will be reinforced or enhanced by the types of assessments used by the lecturer, the relationship which develops between the lecturer and the students, and the content of the curriculum. For example, a high content curriculum, with expectations of a passive student role is likely to lead to surface, short-lived learning, whilst a problem based curriculum, which involves critical questioning and analysis, will lead to a deep learning outcome.

There are other factors which affect the outcomes from higher education and impact on the role of the teacher. We have increasingly moved in the last 20 years from an elite to a mass system of higher education. We have all experienced the growing size of lecture theatres and tutes; the increasingly diverse student profile, and the increasingly diverse expectations placed on us by all sectors of the community. As noted by Nightingale & O'Neil (1994), we are now expected to be entrepreneurs, global educators, researchers and teachers. Increasingly, we are also subjected to scrutiny by quality assurance measures, and different stakeholder groups in higher education. Nightingale and O'Neil (1994) indicate that quality assurance procedures - those which demand objective outcome measures - will tend to tap into, and inadvertently reinforce, surface learning outcomes. These pressures overall, as discussed by Noble (1994), have led to increasing discontent with the changing role of the academic.

There will be other factors also, related to environmental supports and the relationship between the teacher and the learner which will affect the role of teacher and student in the learning process.

From the student perspective, factors within the university environment which affect the achievement of quality teaching and learning include its social environment and student roles and processes.

Linda Slack-Smith (1994), a presenter at last year's forum, stressed the importance of a supportive social environment as a necessary condition for quality tertiary education. She described elements of such an environment in terms of empowerment, equity, and energy and they included:

- a system that is easy to understand and an awareness of the "system within the system"
- the implicit university culture
- clear goals for all participants
- a sense of control over outcomes
- teaching which is helpful but not care-taking or co-dependent
- educational objectives of competencies rather than volume of material learnt, and
- management styles and structures that provide a sense of equity and clarity of roles

The impact of student roles on the achievement of quality teaching and learning includes the common student assumption that only those with the most knowledge are entitled to speak up in class. Morgenstern (1992) claimed that this implicit law of student culture assumes a hierarchy of knowledge and it highlights the difference between student and teacher perceptions of the value of participation.

Student processes obviously have an impact on the achievement of quality learning. The student as a passive surface learner or recipient of knowledge is illustrated by Garner's report of student agreement with such statements as:

As a student my job is to keep the lecturers happy and complete the work they give me. They reward me with marks.

and

I think that the best way for me to learn new things is to go over and over them until they are fixed in my head.

However, student roles and processes are subject to change. Becker et al. (1989) found that, in their sample of introductory psychology students, the most common pre-course expectations were:

- amongst males - to get a good grade and pass the class
- amongst females - to develop good study habits and stay awake

By the end of the course, male and female students' most important expectation was to learn more about human behaviour and emotion.

Overall, we found recurring themes in our literature search which we would like to highlight as issues that are central to the achievement of quality teaching and learning. Those issues are:

- the roles and expectations of the teacher and the student
- the learning environment, and
- the research agenda in higher education

We would now like to talk to you about ways of addressing these issues.

Regarding the issue of the roles and expectations of the teacher and the student, we identified a fundamental dilemma. Students need to have control over their learning in order to promote quality deep learning but this is opposed by a fear of relinquishing control of a process for which teachers are, traditionally, held responsible.

In order to help students take responsibility for their own learning, Jeppesen, Laursen and O'Neil (1994) indicate the role of the lecturer as that of facilitator; mentor and consultant to the student's learning. The lecturer takes on the role of resource and guide. Within such a role, the lecturer is required to take on a reflective practitioner role, which involves movement within the action research cycle. In such a role, the lecturer, working towards continuous improvement, would integrate evaluation and reflection as critical components of his or her work. Samson & Radloff (1994) offer a reflective practitioner model for the development of student writing skills. Such a model could be incorporated into all student planning activities.

In terms of curriculum and teaching styles which enhance quality in teaching and learning, Nightingale and O'Neil (1994) indicate 8 principles which we should follow. These incorporate:

- student ownership of learning
- open, supportive and flexible relationships
- engagement in reflection and evaluation and
- the need for adequate environmental supports

These principles presuppose an intrinsically motivated and reflective learner.

Research has shown that it is possible for teachers to enhance intrinsic motivation in students. Wlodkowski (1985) states that:

“when difficult assignments seem unconnected to any highly-regarded outcome, students view them as another hurdle to be jumped to achieve a good grade”.

He found that maximising student choice, optimising challenge, and giving positive feedback improved students' intrinsic motivation.

The assumption of a need for a reflective learner is illustrated by Garner's claim that teachers actually have very little control over what students learn. He explains that, although teachers like to think that they are “getting the message across” and that students are “taking it in”, the fact is that what students learn depends, not on what is presented to them, but on their own interpretation and frame of reference.

Finally, issues related to quality teaching and learning can be addressed by attention to the education research agenda. Ramsden (1987) recommends a systemic or multi-dimensional approach to

education research as this captures holistically the dynamic, interactive processes of teaching and learning together with the contexts in which they occur.

Fundamental to these changes will be a paradigm shift, a change in world views held by all important stakeholders in education - a move away from a heavy reliance on objective outcomes; a credential-based approach to education which places value on the dependency-making, expert transmitter of information, teacher role.

Are we willing and ready to challenge the dominant paradigm, develop a holistic systems perspective in our research agendas in higher education?

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CRUMBS FROM MY TABLE: ANECDOTES FROM 11 YEARS OF TERTIARY TEACHING

ABSTRACT

When I started sessional tutoring at the (then) WA College of Advanced Education in 1984, I was armed with previous experience as a full-time undergraduate, six years of research in government, confidence in my knowledge of things mathematical and statistical and not-so-slight trepidation at being out the front of a class instead of behind a desk. By 1994 I had completed further study as a 'mature agelpart-timer', my time as a tertiary teacher outweighed my years as a bureaucrat and I realised that the learning curve of subject knowledge was forever shifting. However, I could step up to a podium with or without prepared notes and mostly without sending up a silent plea for a hole in the ground to swallow me up!! What has happened in the intervening years has been a mix of on-the-job trial and error training, informal collegial brainstorming and formal how-to-teach sessions. My presentation captures examples of this teaching and learning mix and concludes that there is no end to this process as long as subjects are evolving and society and the students it sends us are changing.

INTRODUCTION

As an economist, I will in this paper invoke the economist's favourite tool 1 - a mathematical model - to present my anecdotes. That is, I will treat teaching and learning outcomes as a function of four inter-related entities - myself as the 'teacher'; the students as the 'learners'; the environment which includes both the classroom and the 'system'; and the subject matter.

THE 'TEACHER'

Back in 1984 I had been working full-time in the Commonwealth and State (W.A.) Public Services for six years as an Economist-cum-Research Officer. I had completed my Bachelor of Economics full-time seven years earlier. I had no teaching experience although I did in the course of my work have to present information or papers to colleagues and senior management.

I was offered sessional tutoring at the (then) W.A. College of Advanced Education (W.A.C.A.E.) on the Mt Lawley campus with tutorials for the Bachelor of Business Foundation (compulsory first year) unit which is now known as Business Statistics. My familiarity with this subject derived from both my undergraduate study and my work experience. Nonetheless, it had been some time since I had gone back to basics with the statistics I was to have been teaching, so my preparation time for the tutorials was quite long (up to 3 hours). I also attended the lectures as an observer which I thought was necessary to ensure I was teaching the unit in a fashion consistent with the lecturer's style. However a few weeks into Semester, one of my students misinterpreted my attendance at lectures, suggesting that I was learning also!! Naturally I stopped attending the lectures. As it happened though, my teaching style did comprehend the lecturer's priorities. Now however I don't see this as being necessary as students can benefit by having differing teaching approaches delivering the same subject matter (Race and Brown 1994).

In 1994 I was into my eleventh year of teaching including periods of sessional tutoring and full-time contract lecturing. In the intervening years I had successfully completed a Masters by course work programme in which I had to attend 'seminars', write dissertations and sit exams as a 'mature age/part-timer'. I had also attended an in-house teaching and learning seminar series and conferred irregularly with colleagues both within and outside Edith Cowan University.

I had also moved on from first year Business Statistics to the daunting heights of third year Taxation Theory and Finance, undergraduate and postgraduate Economics and honours thesis supervision. I was also running my own units - selecting texts, setting assignments and exams, deciding course outlines and objectives. I was overwhelmed by such autonomy, until I read the fine print - handbooks, re-accreditation guide-lines, exam and result time-lines, timetabling, pre-requisites and so the list goes on. In one unit I decided that the objectives I had inherited did not appeal so I merrily rewrote them to better reflect the way I was teaching the course (Pasch et al 1991). In particular I was keen to make them more realistic and pragmatic. A few Semesters down the track I was advised that objectives can only be changed in the re-accreditation process. So I had to dig out the old objectives and try to massage my course content and assessment to fit.

My priority in 1984 was to ensure that during the allotted tutorial time, I covered the answers to all the set tutorial questions. I wrote in detail the answers on the board and followed these set questions methodically. It never occurred to me that the students might only need detailed answers to some of the more difficult questions. Although I made a point of getting to know all their names by the third week, I did little with this information other than marking the attendance register. In 1994 my priority was for most students to understand most 'things'. I tried to cover what I thought was necessary for the course in the contact time, be it tutorial or lecture. If we ran out of time I would either try to slot in the information later in the course, get the students to read up on it or forget about it altogether. I understood finally that some students will just not make the grade and others I may have trouble keeping up with. I have found some Semesters are fun, and others just hard work.

THE STUDENTS

In 1984 I was allocated early evening tutorials so my students tended to be 'mature age/part-timers'. This necessitated a slower approach to the tutorial work with lots of repetition.² Also the students were coming into the Statistics unit with minimal mathematics buried in their respective dim and distant pasts. Those who were studying full-time may have been working but only on a casual basis. Generally I was always the youngest person in the room.

Some of the students had English as a second language. Nonetheless I recall only one student in those early days whose English comprehension was so poor that she translated her work from English into Chinese, performed the mathematics in Chinese and then translated her results back into English. She asked for a longer examination time which I pursued on her behalf. Not surprisingly, this was knocked back on the basis that students coming into the degree should have the necessary language competency.

In 1984 I did not come across any plagiarism or students minimising their study efforts through collusion, etc. Students in 1994 were more various, probably because I was teaching across a broader range of units at different times in the day. A major change I've perceived is the greater variation in English language competency for overseas students. Still, this may have been the case in 1984 with the assessment requirements of the Statistics unit not exposing such difficulties.

In 1994 I came across my first case of 'cheating'. Two students handed in almost identical 400 word assignments. I say 'almost identical' because most phrases in the sentences and sentences in the

paragraphs were rearranged. However the nature and ordering of paragraphs was identical and the final paragraphs which held some unusual phrases and commentary were exact replicas. I decided to award the original paper full marks and the copy 'zero'. To his credit the 'copier' then went on to complete an exemplary exam paper which could have earned him a distinction in the unit. Ours is not to reason why, or is it?

THE ENVIRONMENT

In 1984 I was taking tutorials in small tute rooms and the number of students after the first three weeks usually settled down to a manageable single figure. By 1994 I had taught in a range of room sizes and types - Case Studies, lecture theatres, seminar rooms and claustrophobic tute rooms. The Case Study rooms I have found are suited to anything but Case Study presentations! Although the lecturer can be heard by the students, the acoustics are such that the lecturer cannot hear the students responses or questions. Moreover, in certain dead spots the lecturer is treated to an echo of her own voice. This is an awkward problem for those of us who move across and around the room during the course of a lecture (something I would not have contemplated doing in 1984). Lublin (1991) refers to the importance of the environment for learning.

Whereas in 1984 as a sessional tutor I was uninvolved with course setting or university affairs, the move to a full-time contract exposed me to the not inconsiderable range of non-teaching responsibilities academic staff have thrust upon them. These include voting for Department Chairperson, preparing re-accreditation documents, sitting on committees (at University or Faculty level), attending and contributing to Department and School meetings, filling out forms (Research Activity Index, Staff Profile, etc), advising students on majors and minors and attending graduation ceremonies. On the teaching side of course there are the requirements of setting courses, ordering textbooks, preparing course outlines, organising teaching assistance, marking assignments and exams and meeting Student Administration deadlines.

Since the granting of University status we also need to "publish or perish" (Sadler 1992) so in our spare time, we are all to some degree doing research, be it funded or unfunded. We do this with one eye on the value of points from our Research Activity Index and another eye on University and Faculty research objectives, particularly if we intend to request funding assistance. For those of us braving the New World of Competitive Grants, we need to get a handle on terminology, priorities and the potential for collaboration. The time and effort that goes into these grant applications is unacknowledged, particularly if the grant is unsuccessful.

In 1984, we taught with our own instinctive style, tempered by any teacher education both formal and informal we may have done. By 1994, there were innumerable constraints intervening in this approach. For example we need to ensure the language, content and presentation of our teaching is not racist or sexist (Gilbert and Taylor 1991). We know that freedom of information legislation applies to our assessment marking guides. Now students can and do question not only the application of the marking guide to their work but also the construction of the marking guide itself (Chadwick 1985, Gaze 1990, Cannon 1992).

There is also an awareness of comparable courses and staffing arrangements at other tertiary institutions in Western Australia and, to a lesser extent, in the rest of Australia. The funding constraints imposed by DEET, in particular, have seen us competing for students across institutions, Faculties and Departments (DEET 1994). We've introduced full fee and bridging courses, and Summer School to shore up Departmental funds so that research funding and time release for academic staff can be financed.

THE SUBJECT

The Statistics unit I was teaching in 1984 has changed to the extent that it now includes topics from a now extinct Quantitative Methods unit. This necessitated the deletion of some topics from the original unit. The textbook has changed a number of times in the eleven years as has related reading material (Watson et al 1975, 1980, 1986, 1990). The accompanying workbook has been revised and the allowable calculator list has both changed and grown. The depth of the course I believe has lessened due I believe to the wider reach of topics and the diminished mathematics entry skills of the students. I see these changes as essential and not contentious.

Economics on the other hand has undergone an exciting revolution (Rogers and Neal 1994). Not only have theories come and gone, and economies disappeared and/or re-organised, but there has been a phenomenal growth in textbooks of all shapes, sizes and emphases. The course structure for the Economics major has undergone a transformation in unit labels and content to mirror the diversity and breadth of the genre in relation to the Business degree generally and economics training specifically.

Such is the case for the Economics major overall. Less can be said for the compulsory introductory Macroeconomics unit. In an attempt to accommodate the perceived lower quantitative skills of first years, this unit has been thinned. However it has benefited by contemporary economic experience such as the 'recession we had to have' and the end of socialism in Eastern Europe. From a theoretical perspective, advances in economic thinking have generally been divulged well beyond the first year units due to their innate difficulty. To some extent this short-changes our first year students, but the inclusion of this material on top of the economists' peculiar bundle of fundamentals could be too ambitious.

CONCLUSIONS

Throughout the past eleven years I have noticed differences. I have highlighted some of these as probable irreversible changes and others as just differences due to the changes in my teaching assignments. There is a difficulty in identifying which is which as in some cases both are occurring! Just as none of us are immune to life's lessons, neither can we avoid the lessons our teaching or academic experience affords us. The frustration is knowing that although there may be an Everest in our search for 'better teaching', we are forever stuck on the icefloe, making sometimes major and many times minor forays up to, but short of, that peak.

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FOOTNOTES

- 1 McTaggart, Findlay and Parkin (1992 page 27) may argue that "graphs have become almost more important than words" but even these visual tools have a mathematical foundation.
- 2 Orr (1987) relates this to the clutter and anxiety of older students rather than a dearth of grey matter.

SMALL GROUP PEER ASSESSMENT OF THE HUMAN COMPUTER INTERFACE: A CASE STUDY

ABSTRACT

The design of the human computer interface is a major determinant of the usability of computer software. At Edith Cowan University, second year Computer Science students learn software application development by developing a small software project in an experiential environment. This paper reports on the initial exposure of a small, close knit group of students to peer and self assessment when peer, self and academic supervisor assessment were all used to assess the human computer interface of software projects.

A comparison of student opinions about peer assessment canvassed before and after the assessment exercise, shows a trend to changing attitudes. Assessment scores awarded by the academic supervisor, the student themselves and their peers are compared. Students tend to assess themselves lower than they were assessed by their peers. The academic supervisor tends to assess students slightly higher than the students' peers. Finally some issues relating to the use of small group peer assessment as an aid to student learning rather than solely an assessment tool are discussed.

INTRODUCTION

This case study describes a small group of Computer Science students undergoing assessment by their peers. The research group ETALICS (Effective Teaching and Learning in Computer Science) funded data collection and entry by student P. Smith. Their help is gratefully acknowledged.

The "Human Computer interface" (HCI) is that part of a computer system with which users interact, ie input data to, or read information from. Preece (1993:14) states that the function of the HCI is to allow users to carry out their tasks safely, effectively, efficiently, and enjoyably. The HCI primarily involves computer screens and hardcopy printouts but also multimedia elements sound, video etc. This case study was restricted to the assessment of student project work in designing computer screens and paper reports.

Second year Computer Science students on the Bunbury Campus of Edith Cowan University studying a unit in Application Development were involved in this study. This was a small and closely knit all male but otherwise not particularly homogenous group of 12 students. One third of the students were part time and one half mature aged, most were Australian and a couple were fairly recent immigrants. These students were highly competitive academically and had worked together closely for two years and knew each other well. Socially they tended to divide into two subgroups. Considerable trust had built up over time between the students and a good rapport with their female lecturer was evident. They had worked together before.

There were several reasons for undertaking this project at this time. On completion of this unit students would be moving into the final year of their course where they would be required to undertake a year long group project with a peer assessment component. There was an unfortunate history of previous students misunderstanding the requirements of that particular peer assessment exercise with appeals and reappeals in two previous years. Bunbury campus students are a small

close knit group and all students were well aware of this sad history. An opportunity was awaited to shed a more positive light on the prospect of peer assessment and to give students experience and confidence in the validity of this activity before commencing their final year project.

For some time, the lecturer had considered issues probably as old as education itself and no doubt similarly mulled over by many academics in other disciplines. What is art and what is good design? How do you teach these? What enhances functionality? Does it all depend on the eye of the particular beholder? What part do these considerations play in educating IT professionals to produce better HCIs?

The final trigger for this study came from a student who presented a screen designed for a University course information system in a workshop. The lecturer considered the HCI inappropriate but the student strongly disagreed. He pointed out that throughout his course he had been encouraged to profile the prospective users of his computer systems (age, gender, culture, education, expertise etc) and then design screens considering that profile. He stated that he had *"designed for a fellow young student user just like him, not for a middle aged female Computer Science lecturer"*. Gender and age bias aside, he had made a valid point if not won a complete rational argument. Thus was the peer assessment project born.

METHOD

Students and lecturer discussed the possibility of peer assessment contributing to part of their final project mark. It was agreed to restrict the peer assessment to the HCI component of the project (5% of the final mark for the unit). Student project HCI screens and reports were assessed by the student designer, his peers and the lecturer. Only the average of the peer's ratings contributed to the final mark.

Student opinion about the peer assessment exercise was surveyed in a pre assessment survey. Students raters were then given a marking guide / feedback instrument to use for the peer assessment exercise. See Fig. 1. This guide was carefully explained to them. Student time-keepers and marks collators were appointed. The projects were assessed over a continuous four hour period with regular breaks. Each ratee demonstrated his project and the raters assessed it. After each project demonstration, all student raters present handed their ratings to the student marks collator who tallied, discarded the highest and lowest, averaged and recorded the individual peer ratings before passing the marking guides / feedback forms on to the ratee providing written feedback. The ratee had in the meantime completed a post assessment survey and recorded his self rating of his own HCI.

Name		Mark / 5					Feedback Comment
Screen design		E	G	S	P	M	
Field placement		E	G	S	P	M	
Report design		E	G	S	P	M	
Menu design		E	G	S	P	M	
Use of GUI objects		E	G	S	P	M	
Use of colour		E	G	S	P	M	
Navigation		E	G	S	P	M	
Task oriented		E	G	S	P	M	
functionality							
Intuitiveness		E	G	S	P	M	

Rating Guide: E excellent, G good, S satisfactory, P poor, M missing

Fig 1: Peer rating marking guide / feedback instrument

Students were required to attend and rate at least the demonstrations before and after their own presentation but most students chose to rate all the demonstrations. The third year final project students also showed considerable interest and many attended some demonstrations and filled in rating forms. At the request of the ratees, these ratings were not reflected in the final scores. However they were passed on to the ratees and provided additional and welcomed feedback.

Quantitative data from the two surveys was processed in SYSTAT a statistical analysis package. An Access database was used to record qualitative survey comments and the ratings were compared and charts produced using an Excel spreadsheet.

RESULTS - COMPARISON OF SELF, PEER AND LECTURER ASSESSMENT

The average ratings of peers, self rating and lecturer rating were compared - see Fig 2. The ratings obtained by the three methods were similar. On average, self assessment was 1.6% lower than peer assessment which in turn was 1.8% lower than Lecturer assessment. These similarities demonstrated the validity of the peer rating process to the students.

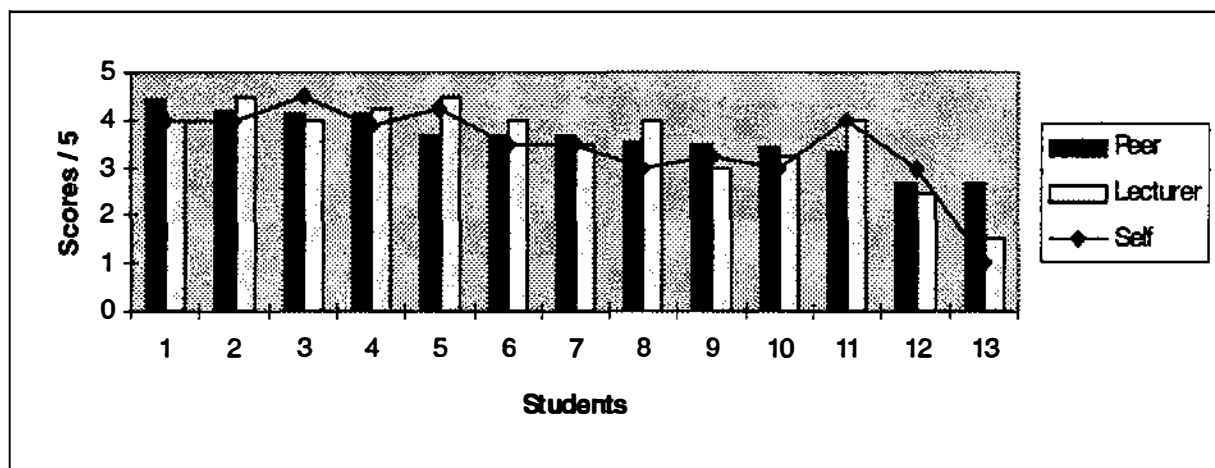


Fig 2: Comparison of Peer Average, Lecturer and self rating of the HCI

RESULTS - STUDENT ATTITUDES PRE AND POST THE ASSESSMENT EXERCISES

The surveys conducted pre and post the peer assessment exercise showed plenty of student confidence in the process and some movement in attitudes over time.

Students confidence in their own ability as assessors was 100% in the pre survey dropping to 81% in the post assessment survey. Pre survey student comments were optimistic: *"I reckon I can give a reasonably fair review"*, *"Don't know art but I know what I like"*. In spite of this 100% confidence, no student reported being aware of how to assess someone else's work in the pre assessment survey but 73% knew how to do this in the post assessment survey. The post survey also reflected some more realistic views familiar to most teching Academics. *"Its harder to put a mark on someone's work than you might think"*, *"Consistency is a problem"*

Student confidence in their peers' competence to rate work grew with their own experience of the rating process. In the pre survey ie before the assessment exercise only 54% of students were confident of their peers' competence to review their work. This increased markedly to 81% in the second survey. Student comments supported this view. *"Other students are a pretty good judge of*

how good your work is", "Students know a good or bad piece of work when they see it", "Lack of competence in student markers is outweighed by other advantages"

Possible peer bias issues which might concern students were canvassed in the pre survey. This concern was unfounded as students were generous in their expectations of their peers. 82% of students were confident that their peers' competitive instincts and wish for high grades would not influence their ratings. A similar 82% felt that friendships, personal likes and dislikes would not be a consideration.

In general this group was very positive about the peer assessment process. In both surveys, 27% of students were strongly positive and the remainder hopeful. No student reported that they were neutral, concerned or very worried about the peer assessment exercise.

OTHER RESULTS

Students supported the validity of peer assessment. 55% of students felt that this was a worthwhile way to assess their work with 45% unsure and no negative responses. I consider this is a positive response as students were surveyed after their demonstrations but before they had seen their peer's ratings.

Many students commented favourably on the broadening of the marking base: *"Receive views from larger user group", "An averaging of many opinions - good", "Get a lot of different opinions of your work", "Everyone knows what is difficult more than the lecturer (no offence meant)", "See my work through the eyes of others" and "All ideas shared are bound to be beneficial either critical or complimentary"*.

Students gained other experiential learning outcomes. 82% reported that this was a worthwhile way to learn about peer review, thus fulfilling the covert goal of this exercise. Nearly half the students reported that this exercise would influence the way they prepared future assignments whether for peer or lecturer assessment. Student comments included: *"Learning process for marker", "This is a good learning experience of what happens in the real world.", "I saw students trying to sell their product" and "I learnt capabilities I was previously unaware of"*.

FACTORS CONTRIBUTING TO THE SUCCESS OF PEER ASSESSMENT

The students in this case study were very confident both in their own abilities and the fairness of their peer raters. Montgomery (1986: 19) suggests that given certain procedural conditions, peer assessments are indeed highly reliable. She found them also to be valid. Bias of the rater accounted for only a very small portion of her rating variance i.e. the raters reflected differences in ratees' performances rather than any biases about the ratees.

It is possible that the group cohesiveness and student familiarity with each other may have been contributing factors. Ramsay and Lehto (1994: 40) report that in a manufacturing organisation, peer assessment teams had difficulty evaluating new employees whom they do not know well. No such difficulty was reported in this case study. Trust in the integrity of the University system and the Lecturer may be other important factors contributing to the successful outcome of this peer assessment exercise. Hughes and Grote (1993: 57) consider similar factors an important success determinant in peer review in industry.

PROJECT OUTCOMES

Students benefited from this exercise and will enter the final year of their course with a better understanding of what is involved in peer assessment. The validity of this was demonstrated to them with comparable ratings returned by their peers, their lecturer and themselves.

This exercise was not just a means of assessing students but also an experiential learning activity. The educational insight gained by the process itself was a valuable outcome. Students felt that in assessing others' efforts they learned a great deal about HCI design. They acknowledged that this experience would be valuable both in the workplace and in the design of future material for assessment.

One of the students deserves the final word.: ***"By assessing, you learn to do better"***.

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REFLECTIVE PRACTICE IN CROSS-CULTURAL UNIVERSITY TEACHING

ABSTRACT

This paper is a report on a research and development project undertaken within the implementation of the Cross-Cultural Education Policy at Curtin University, Western Australia in 1994. The project involved a curriculum development program in which a group of five lecturers, assisted by an action research facilitator, undertook to review and develop projects in one of their classes during second semester. The collective aim of the five projects was to develop more appropriate curricula for cross-cultural learning situations. The action research facilitator (the author) worked as a participant observer to conduct case studies within the epistemological frameworks of critical and grounded theory. Each of the lecturers made discoveries and development within their classroom curriculum (through changes to the designs and implementation of a particular unit) which led to observed improvements in student learning. They also expressed a sense of satisfaction from undertaking the program in terms of improvements to their own teaching and professional development. In the series of papers which follow in this symposium four of the lecturers describe their professional and curriculum development as an outcome of taking a self-critically reflective approach to their work and sharing this within a critical group.

INTRODUCTION

The main purpose of this paper is to give an account of the program for self-reflective practice which was undertaken by the lecturers whose papers follow within this symposium. To begin, the aims of the project are addressed in terms of the underpinning definition of curriculum. Next, the nature and structure of the program are outlined and the actual review and development process within which the self-reflective practice occurred is explained. From here, the research method is described briefly along with a summary of the findings. Finally, some of the implications of the program for quality teaching and learning in universities are proffered.

THE AIMS OF THE CROSS-CULTURAL CURRICULUM DEVELOPMENT PROJECT

The aims of this program, as a policy implementation initiative, were to:

1. Produce curriculum development which would make a difference. That is, to help lecturers move from a monocultural curriculum to a curriculum which is more appropriate for the diverse cultural composition of present day university classes.
2. Introduce the notion that, as a lecturer, making your curriculum more culturally inclusive involves examining and critically reflecting on your own attitudes and beliefs.
3. Create a "ripple effect" so that other lecturers could hear of the program and hopefully feel inspired to take part in future cross-cultural education policy implementation activities.

These aims were interpreted according to a broad definition of curriculum which was later expressed in a video about the project as:

All that constitutes the experience of teaching and learning within a particular program. For example, context, content, methods, materials, processes, assessment, interaction, language, administration and more.

(Hall, in Jones, 1994)

THE CURRICULUM DEVELOPMENT PROGRAM

The lecturers entered the program by responding to a call for expressions of interest in undertaking cross-cultural classroom curriculum development. Funding for the project provided the lecturers with teaching relief from one class for a semester.¹ The program, which ran over one semester, involved the lecturers in workshops, a series of individual conferences with the facilitator, a series of group reflection sessions and on-going curriculum review and development activities within their respective classes. The program outline and timeline was as follows.

THE PROGRAM OUTLINE AND TIMELINE

Monday 18th July * Pre-semester workshop: Full day workshop on action research process, initial planning of individual projects and negotiation of procedure for working with the facilitator.

Week 1 Individual project work-refining thoughts about specific aspects of curriculum to focus on.

Week 2 * Individual conferences with facilitator - Preparing for first round of data collection, or planning for action as appropriate

Week 3 * Group reflection session - supportive critique of plans

Week 4 Individual project work

Week 5* Individual conferences with facilitator - analysis, replanning

Week 6 Individual project work

Week 7 * Group reflection session

Week 8 Individual project work

Week 9* Individual conferences with facilitator - analysis, replanning

Week 10 Individual project work

Week 11 Individual project work

Week 12* Group reflection session

Week 13 Individual project work

Week 14 * Individual conferences with facilitator - analysing and examining outcomes

Week 15 * Full day workshop

- (a) Presenting on outcomes and process**
- (b) Considering further dissemination strategies - on campus**
- (c) Publication possibilities**

*** = sessions with the facilitator**

The program outlined above indicates the series and sequence of the main events but the actual review and development procedure requires elaboration which is provided forthwith.

The review and development activities mentioned earlier were carried out through the process of action research (Carr and Kemmis, 1983). Through this process, and the assistance of the action research facilitator, the lecturers identified one class and an area of the curriculum which would benefit from development. From here they set out to systematically collect data on the curriculum as it unfolded, reflect on the data, plan and implement changes and monitor those changes. This process was repeated in a cyclical manner as ideas and hunches were tested and teaching practices and course designs were changed to alter the learning experiences of the students involved. In some cases the students were enlisted as data collectors and so took an active part in creating a more culturally inclusive curriculum.

The investigatory process described was made more reflective through the regular individual conferences with the facilitator and regular group reflection sessions. In the individual conferences the lecturer's reported and discussed their data collection, analysis and plans for action with the facilitator and the group reflection sessions focused mainly on lecturers reciprocating support and critique for each others' projects.

The research method used to construct case studies of the five projects was an adapted form of participant observation within a critical hermeneutic framework. Data were collected through: recording notes on the lecturer's cyclical planning, action, data collection and reflection when they discussed their projects during the individual conference sessions; 2 lecturers' samples and analysis of data; and, observations of comments made and written records shared during the group reflection sessions.

Data collected through the methods described above were compared to the aims of the program in order to identify the findings (which included the program outcomes). These outcomes, which will be substantiated within the subsequent papers in this symposium, can be summarised as follows.

- 1. The program did make a difference to the quality of teaching and learning:**
 - (a) Unit outlines were redesigned to increase student participation and interaction between cultural groups;**
 - (b) Unit content was changed to increase relevance;**
 - (c) New teaching approaches and processes were adopted to meet observed student needs;**
 - (d) Assessment procedures were altered to increase the emphasis on active learning;**
 - (e) Student feedback was regularly sought and made use of in both short term and long term planning;**

- (f) The student learning environment was improved; and
- (g) Pass rates were raised by instances of successfully intervening where students were at risk of failure.

Furthermore, the review and development process which was used (action research) provided for a gradual improvement and refinement of teaching and learning. These changes to teaching and learning represented curriculum change which was developed and carried out within the classroom context, implemented immediately and also contributed to the lecturers' plans for future curriculum development.

2. The program involved the lecturers in critically reflecting on their own beliefs and attitudes which were brought to bear on their teaching. Furthermore, it did this in a manner which was professionally satisfying to the lecturers concerned.
3. The program created a "ripple effect":
 - (a) This particular form of action research placed emphasis on the social /political context of the curriculum setting. This meant as teaching and learning strategies were explored and developed so were social/political strategies being developed to elicit optimum collaboration and acceptance of the change which was being introduced.
 - (b) The emphasis on collaboration with people involved in the curriculum settings brought about positive side effects causing some other lecturers to experience beneficial changes to practice.

Overall, the outcomes suggest that the emphasis on collaboration, critical reflection and action served to enhance the quality of teaching and learning as well as the enthusiasm and work satisfaction of the lecturers involved. Now to consider the implications of self-reflective teaching programs, such as this one, for the enhancement of quality teaching and learning in universities.

IMPLICATIONS FOR QUALITY TEACHING AND LEARNING IN UNIVERSITIES

Some implications of self-reflective practice in university teaching have already been identified in the relatively new but growing literature in the field (Jones, 1994; Smith, 1994; Zuber-Skerritt, 1992; and Weeks, 1993). This literature reflects a strong influence from the discipline of Education wherein lecturers have been involved in promoting and refining this form of professional development in primary and secondary schools for the past decade and a half. The implications suggested by this study add support to those in the developing literature. The implications are that programs such as this, which involve a group of lecturers undertaking action research for classroom-based curriculum development:

1. Induct lecturers into actively taking on quality teaching as their professional responsibility.
2. Can create "ripple effects" as well as serving to bring quality teaching and learning to a centre of attention within universities. This can occur where there is an explicit aim and strategies to disseminate.
3. Promote collaboration between lecturers involved and associated with the program.
4. Draw attention to a common purpose between all university lecturers.

5. Provide evidence that quality teaching and learning is being pursued as a legitimated and on-going activity.

In conclusion, the lecturers' accounts of their experiences and the stated outcomes of this program establish that it was a success. Furthermore, the project provides evidence that self-reflective practice can contribute to self- accountability and that these are achievable aims within university teaching.

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FOOTNOTES

- 1 The funding, received through a campus-based Equity and Access Grant, was secured by the Cross-Cultural Education Policy Implementation Committee and administered by the Cross-Cultural Curriculum Development Co-ordinator in conjunction with the project Program Steering Committee.
- 2 This was done using a method described as shared-note-taking (Hall, 1994, Vol. Two, Appendix Three).

CLINICAL TEACHING INVOLVES MORE THAN EVALUATING STUDENTS

ABSTRACT

For nursing students, a substantial part of their education involves clinical practice. There is literature to indicate that when students have a positive experience in the practice setting, they are more likely to undergo meaningful learning. (Flagler, Loper-Powers, & Spitzer, 1988; Wood, 1982). According to literature, a positive experience which enhances student comfort, reduces anxiety and increases the student's self-confidence is more likely to promote the student's ability to apply energy creatively and to achieve learning goals. As the clinical setting is a laboratory in which to learn as well as an interpersonal environment, the cues that the students receive from their teacher can play an important part in the students self- confidence and learning outcomes. This paper will discuss strategies that the writer has used to promote positive learning for students in the practice setting. Although this paper only addresses student learning in nursing, it could be useful information for teachers in other disciplines who are involved in clinical teaching.

INTRODUCTION

Clinical practice is an essential part of many health education programs including nursing. This 'hands on' experience must be satisfactorily completed in order for the student to gain entrance to the profession. Moeller (1984) claimed that the clinical instructor who supervises the student during this 'hands on' practice often bore the burden of being the final gatekeeper to the profession. Other authors went on to state that there were few guidelines to assist clinical teachers on how to effectively supervise students so as to accomplish positive student outcomes (Karuhije, 1987; Wong & Wong, 1987; Mogan & Knox, 1987). On the one hand, the supervisor has the responsibility to be fair to the student and provide learning opportunities in a conducive and non-threatening manner whilst on the other hand he/she needs to ensure that only the qualified enter the profession (Moeller, 1984).

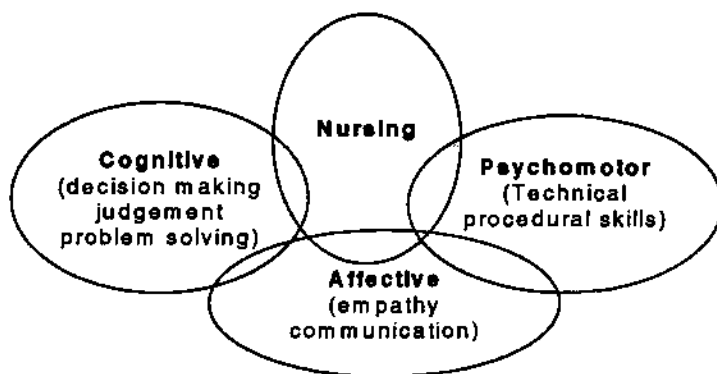
Benoliel (1988) identified learning as an emotional experience that involved the whole person and resulted in change. It is an activity that is synonymous with the learner assimilating knowledge and skills into their sense of selfhood, feeling secure and attaining self-esteem. As for teaching, the author postulated that it had "little to do with giving facts and information but much to do with creating an environment where the students were challenged to testing new ideas and achieving a sense of contribution towards their own learning" (Benoliel, 1988:340). It may not be inappropriate then to infer that good clinical teaching involves providing students with guidelines, resources, and avenues for growth and professional development. Whilst most clinical teachers are knowledgeable about strategies that they can use either obtained from literature or trial and error from their own experience, the writer feels strongly that this knowledge should be shared. The content of this paper is thus mainly based on the personal experience of the writer who had worked with students in the clinical setting for 12 years. Information obtained from students in an informal focal group interview will also be presented within the text.

CLINICAL TEACHING IN THE HEALTH CARE PRACTICE SETTING

Clinical teaching in nursing has been defined as the mode that provides students with the opportunity to translate theoretical knowledge into the learning of a variety of skills required to give patient-centred care (Schweer & Gebbie, 1976). In the clinical setting students need not only technical and problem solving skills but also the emotional discipline that is essential for providing care in difficult patient care situations (Benoliel, 1988). For example, students need:

- a) a sense of being cared for during the process of them learning to care for others
- b) a feeling that they are receiving support and guidance whilst dealing with clinical experiences in which they perceive themselves to be failures
- c) experiences which provide them with a sense of mastery and growth that enhances professional competence.

Students also need to be able to correlate theory with practice in the cognitive, affective and psychomotor domain in the clinical setting reaching acceptable levels of competence in these areas.



Students need to gain self confidence and self-esteem which will help them to identify themselves as professionals. Kramer (1976) reported that nurse co-ordinators attributed the lack of self confidence as the main cause of the inability of new graduates to function effectively. From this writer's perspective, effective teaching may be grouped into three (3) domains. These include knowledge and clinical competence, teaching skills and relationship with students.

KNOWLEDGE AND CLINICAL COMPETENCE

The teacher must have mastery of the subject matter. He/she must be able to discuss not only specific knowledge but also surrounding broad knowledge pertaining to the clinical setting. This is highlighted in the following verbatim student comment:

'Someone who sort of has a very sound knowledge of what they are talking about...they know what they talking about...they are not sort of drifting through it like...you can do it this way or you can do it that way...someone you feel confident to put questions to...

The teacher must be able to demonstrate to students the links between the various theoretical knowledge from different study units so that students can see the 'whole or gestalt' picture of how everything that they had learned in the classroom fitted into the clinical milieu. For example, say the student has just collected a urine sample from a patient. The student could be asked to explain the anatomy and physiology of the kidneys and common microbes found in urine (this could be drawn from their Human Biology and Microbiology lectures). The student could also be encouraged to reflect on their Behavioural Health Sciences lectures regarding human dignity and what it would have

been like for the patient to have an intimate procedure done to them. Several other questions could be posed to the student in a non threatening manner so that a single action is seen holistically. This in this writer's experience has promoted meaningful learning.

TEACHING SKILLS

Teachers need to identify individual student needs and learning styles and plan supervision accordingly. Maslow's (1970) hierarchy of needs could be used as a guide to help meet student needs. This would involve providing a non-threatening environment, praise, constructive criticism and feedback, enhancing creativity and peer support and valuing students as people. They must present material in a manner the student understands and give clear directions as to what is expected of the student. Joyce and Weil (1992: 391) state that "learning styles are important because they are the education- relevant expression of uniqueness of students." The authors explained that learning styles referred to the ways in which students processed information during learning and encompassed individual preferences in perceiving, thinking, remembering and problem solving. Ausubel (1968) wrote that learning styles are also a reflection of individual variations in personality. For example, students with a predominately extroverted personality may in their zest to please the teacher state that they understand something being explained when in actual fact they do not understand. Teachers who do not pick up on this may fail to facilitate meaningful learning. One strategy that this writer has used with extroverted students is to get them to present to their peers what they have understood from the teacher's explanation. Similarly, introverted students may appear to be disinterested and being uninvolved because of their quiet , introspective manner. This is not usually the case and all the teacher needs to do is to gain their trust and give them more time to 'open up' and provide opportunities for them to share their knowledge with others.

Students who fall into the sensate dimension of personality as described by Jung (1972) tend to assimilate knowledge starting from the specific and work towards the general. In teaching these students for example about diabetic care, the teacher needs to focus on a specific care required by a diabetic patient such as how to actually administer the insulin injection rather than teaching about the general care of a diabetic patient. For example:

'It is self-directed, I appreciate that, I don't expect the tutor to stand there and tell us everything but when you are in an unfamiliar environment and you are not fully confident, I need to be spoon-fed every bit of information about any particular thing I'm doing...just the few basic important points I need to know...'

On the other hand, students with an intuitive personality tend to assimilate knowledge from the general to the specific (Rorden, 1987). In this case the teacher in explaining about how to perform a surgical dressing would help the student by first going through the principles of asepsis before going through the actual procedure.

'I think you need some sort of overall idea rather than the tutor go through it step by step...it is very difficult to remember every little step...'

RELATIONSHIP WITH STUDENT

Clinical teachers could enhance student learning by having an unconditional positive regard for them. Teachers need to be sensitive to student's feelings and problems and convey confidence in their ability to learn. In this writer's experience, instilling in students that learning is a joy which is worth pursuing is helpful. At the same time teachers need to demonstrate enthusiasm for teaching, being confident and honest, provide support, be approachable and most importantly being able to admit to errors and limitations thus showing that they are not omnipotent with regards to knowledge.

Student comments included:

'Someone who perceives your needs...someone who provides positive reinforcement as well as criticism...someone who can really support you all the way...at times all you need is for the tutor to say "that was great" ...'

'A tutor who is approachable...someone you feel you can get information, its a two way thing...someone you feel who has a genuine interest in your progress...a tutor who enjoys nursing because otherwise we get a negative feeling from them...'

In situations where teachers need to correct students, they need to clearly convey to students that it is their behaviour that the teacher is not happy about rather than being unhappy with them as people. Students should not be made to feel that their personhood has been put on the line which could damage their self esteem as highlighted by this comment

'You know you have messed up the dressing...you don't need someone to tell you...even if they said 'be careful about your aseptic technique...something like that and you will think about it the next time you do a dressing...you will remember that the tutor picked up on what you did wrong last time...'

and is congruent with Mogan and Knox (1987) whose study found that the worst clinical teachers were perceived by students as those that lacked empathy and belittled them when they made a mistake.

Finally, clinical teachers should present as role models. They need to show students that they are well prepared for teaching and seen as self- confident skilled clinicians who took responsibility for their own actions and who fostered mutual respect.

CONCLUSIONS

This paper briefly touched on useful strategies that teachers can employ whilst supervising students. Whilst most teachers may be familiar with what has been presented, it is important to remember that the quality of student learning is dependent not only on the type of clinical experience but also on the characteristics and skills of the teacher who facilitates that learning (Sellick & Kanitsaki, 1991). The following quote from Kahlil Gibran (1944: 62) emphasises teaching as:

"The teacher who walks in the shadow of the temple, among his followers, gives not of his wisdom but rather of his faith and his lovingness...he is indeed wise he does not bid you enter the house of his wisdom, but rather leads you to the threshold of your mind."

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OPEN LEARNING AUSTRALIA: MELBOURNE (CUP) WINNER OR TROJAN HORSE?

INTRODUCTION

Since its inception, Open Learning Australia (trading name of the Monash owned company Open Learning Agency of Australia) has been the subject of considerable debate. Most of this has focused on its structure, activity and some of the implications for universities particularly in regard to the level of financial return for service provision. This paper will overview OLA, not as an organisation, but as a policy tool of the Australian Commonwealth government as it attempts to influence the agenda for higher education and accelerate cultural change.

As a term, open learning seems to have provided the education community with an open season. for example, most recently Jakupcic and Nicoll (1994) argue, somewhat semantically, that open learning in higher education is a contradiction of terms. More importantly they reinforce the need for educators to regain the initiative in the current debate.

The current Senate Employment, Education and Training Reference Committee, in its "Inquiry into the Development of Open Learning in Australia", supports the view that the vast range of interpretations of this term, at least in part, has been responsible for the confusion surrounding its development. While acknowledging that the ideal has not yet been achieved in institutional practice, it endeavoured to standardise a definition by referencing Professor Richard Johnson's description:

Open learning is an approach rather than a system or technique; it is based on the needs of individual learners, not the interests of the teacher or the institution; it gives students as much control as possible over what and where and how they learn; it commonly uses the delivery methods of distance education and the facilities of educational technology; it changes the role of teacher from source of knowledge to a manager of learning and a facilitator.

THE CONTEXT

Distance education, open learning and government policy

Whilst overall, distance education may have "received a reasonable amount of attention from government committees and university review committees" (Campion and Kelly 1988: 175), enthusiastic Commonwealth government interest and action, for any reasons other than providing limited access to non-metropolitan Australians or providing much-needed students for small and/or regional Colleges of Advanced education, has been relatively recent. Apart from *Open tertiary education in Australia. Final report of the Committee on Open University to the Universities Commission* (Karmel: 1974), such non-traditional forms of higher education delivery were viewed as peripheral in reports on university education in Australia (Murray, Martin, Williams) until the mid-1980's.

Then, in 1988 Livingston identified nine major reports or evaluations dealing with distance education issues being published by the Commonwealth Tertiary Education Commission (CTEC), between September 1986 and September 1987 and a further 11 in-progress or in-press. Whilst abolishing CTEC, the then Minister, John Dawkins also acted on its advice to reduce the number of higher

education institutions funded to provide distance education (a decision since reversed). Since then a number of other reports relating to distance education and open learning have appeared, a National Open Learning Policy Unit has been established within DEET to advise on the development of open learning in Australia and the National Distance Education Conference (NDEC) (now expanded to NCODE) has been established as a forum for providers to develop advice to NBEET and the Minister.

OPEN LEARNING AUSTRALIA

Since 1992 the Australian higher education open learning agenda has been (if not hijacked) at least influenced by Open Learning Australia. Whether or not this was the intention of the Federal Government and the Department of Employment Education and Training (DEET) is the source of some speculation, however the influence cannot be denied.

Controversial from the beginning (see Latchem 1994); whether or not it was conceived in a taxi travelling between the Lakeside Hotel and the airport in Canberra, it has hardly ever been far from the news and the focus of political activity. OLA could be analysed with respect to a range of political, economic, sociological and even educational frameworks. However appropriate each may be, I believe that given the pragmatic, (economically rationalist) nature of the Federal Government and DEET, it is opportune to use the OLA as a indicator in analysing their intentions for Australian higher education.

THE GOVERNMENT PLAN FOR HIGHER EDUCATION

Then Minister for Higher Education and Employment Services, Hon. Peter Baldwin MP, in his policy statement *Higher Education: Quality and Diversity in the 1990's* (October 1991), claims the realisation of "growth with equity" (pv) through White Paper initiatives and sets the direction of further development in higher education in Australia based on "quality in diversity".

The new "direction" evidences itself in a number of measures in the OLAA contract with the Government and thence in OLAA/ provider contracts. An analysis of the relationship between the directions, measures and the objectives for the establishment and development of OLA provides some interesting parallels. While it would not be unreasonable to expect that a government funded project such as the OLI would be in keeping with government policy, it is the degree of this alignment which is of interest and therefore it goes beyond a simple economics/labour market relationship such as that described by Jakupcic and Nicoll (1994). It is in this unambiguous agenda for change that use of OLA as a tool for policy and cultural change in Australian higher education becomes most evident.

The primary sources of information for analysing this relationship are the Ministerial statement and the *Agreement between the Commonwealth and OLAA in relation to an Open Learning Initiative*.

POLICY AND CONTRACTUAL REQUIREMENTS

The clear relationship between Commonwealth policy and the contractual requirements of OLA is shown in figure 1. While there may be some disagreement over specific relationships because of the policy overlap, it evidences the 'carrot and stick' approach so often used by Canberra.

<p>• Measures in the Ministerial statement</p>	<p><i>OLA contractual requirements</i></p>
<p>credible quality assurance mechanisms</p>	<ul style="list-style-type: none"> - <i>quantitative quality assurance indicators</i> - <i>clear definition of service provision requirements</i> - <i>benchmarks for cost effectiveness</i> - <i>accountability and responsiveness to 'stakeholders'</i> - <i>increased requirement of evaluation especially evaluation of outcomes</i>
<p>changing pattern of participation and the relationship between universities and other education and training sectors</p>	<ul style="list-style-type: none"> - <i>credit transfer and recognition of prior learning</i> - <i>collaboration between universities in materials development and teaching</i> - <i>development of a national system through open tendering for provision</i> - <i>TAFE/higher education articulation</i> - <i>increasing uniformity of procedures across the system</i>
<p>potential for new technologies and alternative modes of delivery to improve access to a wider range of students and facilitate some cost effective growth</p>	<ul style="list-style-type: none"> - <i>uses of technology to improve learning</i> - <i>access and equity for target groups and</i> - <i>flexibility of delivery</i> - <i>reinforcing the move to mass higher education</i> - <i>specific contractual arrangements for intellectual property</i>

Figure 1

Specific examples are:

- The voluntary DEET funded AVCC Credit Transfer Project which began in the late eighties has been reinforced by the contractually demanded credit transfer requirements within the Open Learning Initiative framework.
- New initiatives in teaching and learning are funded by the Committee for the Advancement of University Teaching through National Teaching Grants while OLA has a complementary Quality and Innovation Initiative (with one person on both committees).
- The recognition of prior learning and TAFE articulation are *encouraged* within the Unified National System but are central *requirement* of all providers' contracts with OLA (pathways requirements).
- The use and evaluation of new technologies is the focus of the Evaluation and Investigation Program for 1994/5 and is being extensively funded through the joint Open Learning Technology Corporation/OLA project Open Net (formerly OLESS).
- The increased emphasis on formal evaluation of teaching and curriculum through the Course Experience Questionnaire, staff appraisal and the enormous range of formal evaluations of the OLI [e.g. the DEET funded project through the Centre for the Study of Higher Education University of Melbourne, the OLA funded PICA survey of the use of computers and communications technologies in university teaching in Australia, DEET funded evaluation of the TVOL Project (Keepes).]

- The focus on “quality” in the University quality review process and in the performance indicators required though OLA.
- the work on standardising university administrative procedures though CASMAC and the drafting of procedures for OLA which impact the providing universities.

Fees for Australian undergraduate study

The final issue which I will raise relates to full-fee paying undergraduate Australian students. The antipathy to this concept is entrenched in the ALP platform. While there are a number of modest examples of fee-paying through credit recognition, the provision of a range of university study through OLA at a price unable to be cost effectively matched provides a commercial barrier to the legitimate introduction of undergraduate fees within the UNS which reinforces the ideological barrier.

CONCLUSION

With nine consortium members and 18 ‘providing’ universities, OLA policies and procedures can impact about half the Unified National System thereby reinforcing government policy implemented through the UNS.

Indeed it is clearly a strategy for expediting cultural change within higher education rather than an idiosyncratic response to unmet demand. Those looking to understand the direction of higher education policy in Australia would be advised to understand the OLI not merely as a distance education delivery mechanism, but rather as a test bed/alternative implementation pathway of government policy.

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INTEGRATING TECHNOLOGY INTO UNDERGRADUATE MATHEMATICS

ABSTRACT

This paper describes the importance of integrating technology into a mathematics course, in contrast to using items of technology as occasional pieces of support for students learning or teachers teaching. The integrated use of microcomputers in mathematics courses is problematic for practical reasons of access and cost, and we will argue that hand-held graphics calculators provide a more viable alternative. We describe our experiences to date with the use of graphics calculators in a first year mathematics course. During 1994, with access to a limited quantity of calculators, we began a process of integrating technology into the course; we will continue this process into 1995, with some support from a CAUT grant to do so. Particular focus will be placed on the design and administration of appropriate assessment tasks, but we will also describe some of the changes to pedagogy involved, as well as some practical issues of organisation in the context of limited resources.

INTRODUCTION

The context of undergraduate mathematics has undergone considerable change recently, with the development of various electronic technologies. Students arriving from secondary school almost certainly own a scientific calculator, which they have been using for some years. Computers are widely available wherever serious use of mathematics is undertaken, whether in educational institutions or in workplaces. Many students who take service courses in mathematics will need to make use of their learning in contexts in which technological help is taken advantage of. The main focus of this paper is the appropriate kind of response to such an environment.

It is inappropriate to regard technology as an add-on to a mathematics course, since this will inevitably lead to it being regarded as a frill, to be readily neglected by many. Indeed, this is the experience of many students with respect to computers and mathematics courses, both in secondary schools and in the early years of tertiary study. Institutions rarely have sufficient computer resources available when and where the students need them for the use of computers to be regarded as germane to mathematics and learning mathematics. Without such resourcing, mathematics courses are organised on minimalist assumptions of technological access, and are likely to be little different from those of a decade ago.

Adequate integration of technology into undergraduate mathematics courses includes a consideration of all aspects of a course: the mathematical content, lectures, tutorials, workshops, assignments, tests and examinations. Without a measure of coherence among the use of technology in all of these course components, there is a risk that the lowest common denominator position will be adopted, and the impact of technology will be minimal. For example, if technology is used for teaching and learning in lectures, but examinations are unaffected by its introduction, it seems quite likely that students will recognise its use as merely optional. If it is expected that students themselves will develop some

expertise at using technology in mathematics, then this should be reflected in the style of tutorials and workshops.

It is difficult to integrate microcomputer technology into mathematics courses, for reasons of practicality and economics. Even when computer laboratories are available, the levels of student access for learning mathematics are necessarily limited, and it is physically cumbersome to provide access to the technology in assessment situations. As a consequence, it is unreasonable to expect that students will come to regard the microcomputer as a valuable mathematical tool.

The situation is rather different with graphics calculators however. Although microcomputers are much more powerful and flexible, since it is relatively easy to use a variety of software with them, graphics calculators have the substantial advantages of portability and cost. It is likely soon that students will have their own graphics calculators, which will be available at home as well as at university, and that they can be used in formal assessment situations such as examinations. Integration of technology is much more feasible in such circumstances, where reliance is not placed on microcomputers. More detailed discussions of the particular advantages of graphics calculators for learning mathematics are given in Andrews & Kissane (1994), Kissane (1994) and Kissane (1995). A description of the general nature and mathematical capacities of graphics calculators is given in Kissane (1993).

EXPERIENCE TO DATE

This paper is based on our experience with *Fundamentals of Mathematics*, a first year undergraduate course which reviews basic concepts of algebra and trigonometry and introduces students to matrices and the concepts of calculus. It is a service course, offered in both internal and external modes, intended for non-mathematics specialists who will go on to study a variety of courses at Murdoch University. In this paper we describe how graphics calculators have been integrated into the internal mode of the course. Successful completion of this course can provide an entrance to other mathematics courses but more generally students take the course to learn the mathematics that they will need to apply in other subject areas. Through the course students are exposed to a range of applications from a variety of discipline areas some of which illustrate the potential use of graphics calculators in these other subject areas.

It is not uncommon for technology in the form of computers, slides, videos and so on to be used by teachers for demonstration purposes for teaching. In this case, however, technology in the form of graphics calculators has been integrated into other aspects of the course including tutorials and assessment, where it is used by students themselves. This was made possible through funding from various sources across the university which enabled us to purchase a set of 35 Texas Instruments TI-82 calculators for use with internal students in 1994. This particular calculator was chosen for use with the internal students partly because its predecessor, the TI-81, had proved to be successful with external students in 1993 and partly because the staff were familiar with them. (Bradley & Kemp, 1993) A detailed description of the main mathematical features of this particular calculator is given in Kissane (1994). The relatively modest investment enabled a class set of 20 of these portable computers to be used in tutorials and the rest to be put on reserve in libraries across the campus. The tutorials are scheduled at different times so that a brief case containing the calculators can be passed between tutors (Bradley, Kemp & Kissane, 1994a).

As is customary in most undergraduate courses there are weekly tutorials of fifty minutes. In 1994 about twenty minutes of each tutorial was allocated to student use of the graphics calculators. These sessions were directed by a series of detailed worksheets designed to reinforce the concepts presented in the lectures in the previous week, and to extend the students' understanding of the material.

Students were expected to complete these in their own time if necessary, using the calculators on reserve or borrowing them on overnight loan.

Since the aim was to integrate the graphics calculators as much as possible, it was decided to allow the use of the graphics calculators in the third of the short tests taken during semester. The students were given the test during their tutorial time so that all students sitting the test at one time had individual access to a graphics calculator. The questions were designed to be more efficiently answered with the use of a calculator, including situations where solutions were difficult if not impossible to find by other means, although calculator use was not compulsory. Several versions of the test were prepared, to be used in each tutorial, and the results indicated that students taking the test in a tutorial at the end of the week had no advantage over students taking it earlier, a reassuring observation about test security. Due to practical constraints it was not possible to use the calculators in the final examination, however a part of the examination required students to interpret a graph drawn by a computer, a task similar to that needed for successful calculator use. This section of the examination helped to provide evidence of students' ability to understand the relationships between graphs of functions, equations, roots and inequalities.

As the introduction of the calculators into tutorials and assessment was new to this course we were particularly interested in how students perceived this innovation. An independent course evaluation showed that student responses to the use of the graphics calculators was varied, but on the whole was more positive than negative. 88% of the students eventually enjoyed using the calculators and over 80% felt that their use had helped them to understand graphs of polynomial, rational and trigonometric functions. However 76% thought it was a good idea to use the calculators in the test indicating some reservation on the part of the other 24%. A more complete description of student reactions is given in Bradley, Kemp & Kissane (1994a).

The content of *Fundamentals of Mathematics*, has much in common with upper secondary school courses so there are text books containing appropriate content. However the development of suitable graphics calculator activities and assessment tasks is a major undertaking due to a lack of appropriate published resources. During 1995, the improvement of existing tasks and development of new tasks will be helped by the use of a graphics calculator emulator and a computer link to the TI-82 so that actual calculator screens can be printed out. Nevertheless the integration of the graphics calculators into the course involves far more than the practicalities of production; it involves serious consideration of how the use of such technology can enhance student learning.

ASSESSMENT ISSUES

The most critical aspect of integration for a mathematics course involves formal assessment, for several reasons. In the first place, the emphases on different aspects of mathematical learning are likely to change when students have graphics calculators available to them, and assessment situations demand that we understand these changes of direction. In the case of the TI-82 graphics calculator and the *Fundamentals of Mathematics* course, a number of calculator capacities need to be taken into account. These include a facility with graphing, with tabular representations (and thus evaluation) of functions, the numerical solution of equations, matrix manipulations and elementary calculus (differentiation and integration), as described in some detail in Bradley, Kemp & Kissane (1994b). When students have access to graphics calculators, some standard and traditional kinds of assessment items are rendered inappropriate, while other aspects of student thinking and activity need to be addressed instead.

Secondly, integration of technology into a mathematics course implies that the content of the course, and not just its assessment, is likely to change to some extent. For example, a different emphasis on

the solution of equations seems important if students have access to a calculator that solves some equations directly with a 'solve' command, or allows for a graphical solution as well as an analytic solution, as the TI-82 does.

A different kind of change to such a course may be that an important new course outcome that might be expected is the extent to which students can use technology well. In the present case, this involves deciding when to use a graphics calculator and when not to do so, using it efficiently, interpreting the results obtained and describing them in appropriate mathematical language. Such an important course outcome needs to be assessed involving changes to the traditional style of assessment.

Finally, since our assessment practices make clear to both teachers and learners what is ultimately valued most in a course, student responses to the use of technology are notably different when it is clear to them that they will be expected to formally demonstrate a level of competence. In the case of the graphics calculator, our experience so far has persuaded us that some students need the extra incentive provided by the knowledge that at some point they will be expected to demonstrate that they can make intelligent decisions about when and how to use the technology.

An assessment issue of some importance concerns the varying capacities of different graphics calculator models. Care needs to be exercised that some students are not unduly advantaged by having access to more powerful models, or disadvantaged by being restricted to less powerful models. As noted by Kissane, Bradley & Kemp (1994), many uses of graphics calculators at the early undergraduate level do not rely on the most sophisticated capabilities of modern graphics calculators, so that, in effect the problems of differential capacity evaporate. In the particular case of *Fundamentals of Mathematics*, too, the problems are avoided since all students are using the same model calculator, although this phenomenon is not expected to last for many more years. In the USA, the College Board has addressed potential problems of differential capacity in the Advanced Placement examinations, by providing students with calculator programs to use, to ensure that each student taking an examination has at least a minimal set of calculator capabilities at their disposal.

In 1995, our integration of the graphics calculators will include the use of a calculator test (conducted in tutorial groups, as described above) as for 1994. In addition, student weekly assignments will include items for which calculator use is necessary, and arrangements will be made to allow students to use calculators in the formal final examination at the end of the semester. The design, trialling and implementation of these modifications to the assessment programme to incorporate the graphics calculators are supported in part by a grant from the Committee for the Advancement of University Teaching (CAUT). Among the issues to be addressed in this project are what needs to be written down by students in examinations when calculators are used to support their thinking, the effects of calculator access on examination questions that have not been specifically designed to probe student use of calculators, and the administration of examinations when there are not sufficient resources to provide each student with a calculator for the duration of the examination. Two possible solutions to the latter problem are to conduct more than one session for an examination, or to restrict the period for which students have calculator access, so that they can be shared around the whole class. There are advantages and disadvantages associated with each of these solutions. In time, as most students will be expected to own their own calculator, issues of this kind can be expected to diminish in significance.

CONCLUSIONS

Integration is the key to finding the appropriate response to technological change in undergraduate mathematics. A suitable balance needs to be struck between the enthusiastic and uncritical acceptance of new technologies on the one hand and the uncritical rejection of technological influences on

curriculum on the other hand. Integration demands a careful consideration of all aspects of a curriculum, from both the perspectives of the learner and those of the teacher. It seems that the most important elements of integration, and probably the most difficult, are those related to assessment. Our experience to date suggests that graphics calculators are better candidates for integrating technology into mathematics courses than are other kinds of computers, and that both student and teacher reaction to their use is favourable.

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UNDERGRADUATE COURSE CONTROLLER: MENTOR OR MASOCHIST?

ABSTRACT

An undergraduate course controller can range from a "signer of forms", to be seen once a year, to a mentor who interacts with a large number of students regularly. I firmly believe that the latter kind of course controller can improve students' educational attainments significantly.

In Curtin's School of Computing, a senior academic is assigned these duties, with the expectation that about 15 hours per week will be spent interacting with the School's 400 undergraduate students. I believe that the job can only be done effectively if the students know you, are willing to talk to you and realise that you are genuinely interested in their personal and professional development.

INTRODUCTION

The duties of an academic course controller are many and varied, especially when the job involves dealing with 400 undergraduate students. A draft duty statement includes headings such as Counselling, Record Keeping, Policy Advice, Verification of Course Documents, Managing Enrolments, Discipline, etc. The administrative duties are important; up-to-date student records are vital to tracking student progress, making recommendations to Boards of Examiners and general student counselling ("If I take these five units next year, will I graduate?"). Accurate and up-to-date school fliers, brochures and handbook entries are important for student recruitment. Student selection and the granting of exemptions and advanced standing are time consuming but important matters in a course that attracts many mature age and international students. I've even heard some course controllers state the view that their duties include whatever their Head is too busy to do on the day ...

But while such administrative components of the job are very important, they are necessary but by no means sufficient. They aren't the real job ... the "real job" is **interaction with students**: being available, accessible and approachable; being the main point of contact when a student faces uncertainty or problems; being a caring human face in the big, strange, overwhelming, impersonal uni that so many students face early in their academic careers.

STUDENT RAPPORT: BEING A MENTOR

I think it is extremely important for all students to have such a point of contact. But how does a "stranger" (to the new students) accomplish this? I see this as the \$64 question, the uphill battle to convince 120 new kids:

If you've got a problem, come see me. I'm here to help. Despite what you may have heard, I do NOT eat students for breakfast ...

There is no magic answer. After seven years in the job, I think the key is to **be approachable**, physically and personally. By the former I refer to being available to students, not just during published office hours, but also before and after classes, during a coffee break, in the student common room -- some students are too nervous to knock on your door, much less make an appointment via the

secretary. By being "approachable personally" I refer to the amazing and dynamic process where the relationship between lecturer and student grows from "stranger" to "friend and confidant" ... and if we're lucky, even to "mentor" (and sometimes to life-long friendship).

The rest of the paper explores some thoughts, ideas and anecdotes on the interaction between university students and senior staff. These are personal views that may not be shared by some of my colleagues; they simply seem to work well in my School, given the nature of our course, environment, students and my own personality. I'll look at interactions at three levels:

Lecture theatre
Small semiformal and informal groups
One on one

THE COURSE CONTROLLER IN THE LECTURE THEATRE

I am totally convinced that the effective undergraduate course controller should teach mandatory core units in each year of the course; it is by plan, not accident, that I teach core first, second and third year units in first semester. **THE STUDENTS SEE YOU WEEKLY, IN THE CLASSROOM, FROM THEIR FIRST DAY AT UNI.**

The most important of these units is, of course, a first semester first year unit. Course controllers who do not teach first year units usually are unknown to their students ("Do you mean the guy who spoke at Orientation Day -- is he my course controller?"). The best sort of unit to teach is one that contains an overview, "this is life and survival at uni" component (such as the excellent foundation units at Murdoch). In my School, the unit is English for Technical Communication (ETC) 100. I wouldn't dream of letting anyone else teach it in first semester.

ETC-100 combines several related modules. Officially, it teaches reading, writing, speaking, referencing and personal computing skills to science students. It does this by way of a tutorial (staffed by tutors from the School of Communication and Cultural Studies) that resembles many first year English units. The practical component gets everyone up to speed on personal computers, word processing, spread sheets, databases; students must touch type 40 wpm error-free to pass this unit. Officially, the lecture deals with such topics as how computers work, how to write various types of manuals and reports, abstracts, referencing, etc. Much emphasis is placed on reaching the level of the intended audience; one really should write a Programmers' Reference Manual (to be read by another computer scientist) differently from a Users Manual for a VCR or microwave oven!

The "unofficial" parts of the lectures are more important. This is where the new students learn what is expected of them as university students, what standards are demanded, what behaviours are unacceptable (good manners are necessary -- cheating, collusion, plagiarism, hacking, etc. are not tolerated), what course options lie ahead, how Boards of Examiners work. Lecture One is a good time to congratulate them, to encourage them ... "you've got a wonderful three years ahead of you". It's also a good time to be realistic, especially with falling entrance standards: "if your aggregate was below 345, realise that you're in the bottom half of the class; the study skills, motivation and ability that scraped you in with a 300 aggregate will probably get you terminated by the end of the year; 25% of you will be gone before Christmas; if you are too immature to accept the challenge ahead of you, if you are '17 going on 13', if you're here for the social life, you will drown!"

It's not a bad time to drop in the line:

I will do everything in my power to help you, but your success (or lack thereof) is really in your hands. I've got lots of time for battlers, and no time for cheats ...

No one on this campus has a neutral opinion of me ...
I'll be your best friend or worse enemy -- you decide.

(End of Lecture 1). At the start of Lecture 2, I bring along two or three second/third year students who have had academic problems and sorted themselves out; they most likely were terminated and then reinstated in first year. I leave the room for twenty minutes and let these slightly older students talk to the first years. To this day I don't know precisely what they tell the new students, but the kids seem to be listening much more closely when I return.

I find it useful to demonstrate to young uni students that we are human (kids never really believe that parents or teachers actually are "people"). The last 15 minutes of each lecture will involve some sort of interactive and/or group dynamics situation. It might illustrate giving step-by-step instructions on how to do something; the recipe for making a cake (oops, forgot to tell them to turn on the oven -- it's pretty soggy) ... booting a computer (oops, closed the latch on the floppy drive before they put the disk it -- won't go). It's more fun (and the students will remember it much longer!) if I follow someone's instructions **precisely** on "how to walk" (amazing what we assume others to know when giving and following instructions). It's even more interesting if I bring a bicycle to class and tell a "student volunteer": "I've never ridden a bike before; you give me directions ..." "Selling oneself" is an important part of presenting, be it a sales pitch, seminar or job interview. What would happen to the baseball umpire who has to make the impossibly close, championship deciding call, if he telegraphed to the fans and players "I'm not sure -- I'm guessing on this one"? Let's find out ... I unpack my kit, get out the bat, ball, glove, umpire's uniform, grab a half dozen students, and we practice calling **strike three!** at the bottom of the ninth inning, scores tied, bases loaded, two outs and full count. Five years later, this is probably the one scene they remember from their first year lectures.

The hopeful outcome, of course, is that after a few weeks of such exercises, students not only realise that good communication skills are essential, but also start to think ... he's human, he has a sense of humour, he's willing to get up there and look silly ... he IS approachable, I CAN go and talk to him about a problem ... we're in this together, guys!

LESS FORMAL SETTINGS

I try to be very, very visible to the new students during the first few weeks of classes: on the steps, outside the lecture theatre, have lunch in the common room ... It is also important to attach names to faces as quickly as possible (I've already put details to names during the selection and enrolment process). Students really do appreciate this -- they are amazed if you can say hello by name during the third week of classes. This is the best method I've found to get them eating out of your hands. [I overheard a first year telling another: "That bastard actually knows who I am and seems to give a shit about us".]

Dropping in near the end of a late afternoon tutorial just to have a chat, "how's it going", "surviving?", is pretty useful too. Let's face it: adults have problems telling their troubles to strangers. I think it's a lot harder for 17 year olds telling theirs to authority figures in the strange and intimidating new university setting.

ONE ON ONE COUNSELLING

Many of our undergraduates will have some kind of academic problem during their studies; 80% of the time, the **symptom** will be academic but the actual **problem** will be personal. Some are pretty easy to fix: it's not feasible to work 30 hours a week and study full-time; consider a semester's leave

and get your head together (or earn some money, whatever). Immaturity, unreadiness for uni, "17 going on 13" raise their heads here. Family breakdowns (far too common!), illness, death in the family are harder to deal with; many international students also suffer from culture shock and unrealistic expectations from others. And sadly, there is the student who suffers a stroke at age 20, the student who commits suicide at age 18; we try to understand and help their friends get on with their lives ... Another fun element of the job is playing headmaster -- dealing with cheating, plagiarism, hacking and other such things.

Thus there is a strong counselling element to the job, but few of us are trained counsellors. We are frequently the point of contact that gets the student and counselling services together, and often we are the "intermediaries" before and/or after formal counselling. To suggest, as some have, that one should turn away, saying "go see counselling", the moment a student says "I've got a personal problem" is, to my mind, totally unacceptable and unrealistic. A warm smile, a sympathetic ear, knowing someone "gives a shit" really can work wonders!

COURSE CONTROLLER AS "EYES AND EARS"

Because my ideal course controller is in the middle of everything, especially interacting with students, he or she should be the **one** person in the School that actually knows what's going on! I would estimate that a student dissatisfied with a particular subject or teacher is about 50 times more likely to tell me than the lecturer himself (what odds that he'll go see the Head?). And when the course controller has received many, many similar complaints about the same subject, the same tutor ...

The course controller thus obtains an excellent overview of the whole course, student progress, recurring problems; this is a perspective unlikely to be available to lecturers concerned primarily with their own subjects, or to a Head that spends little time at the coal face. I think it is extremely important for course controllers to take advantage of this and to provide timely advice to Heads, advisory boards, boards of examiners. This is another argument for senior staff serving as controllers; would an untenured lecturer be prepared to say "Senior Lecturer Bloggs is doing a terrible job teaching that unit"?

ARE THERE ALTERNATIVES?

I've noted the "downsides" of the job; student tragedies, student discipline, having to play (sometimes) the stern headmaster, having to do on the incompetent or nonperforming lecturer. In my view, someone has to do it (and I am sufficiently experienced and egotistical to think I do it better than most).

But is it reasonable for one individual, who also teaches and attempts to find time for research (as well as his family), to counsel and advise 400 students? When I attended Amherst College in the late 1960's, senior staff shared such duties; each advised no more than 10 or 12 students (but the cost of such an education is an order of magnitude greater than in our public universities). Even if we had the resources, a large number of academics have neither the inclination nor the ability to perform such duties; I think giving every lecturer at uni, say, 20 students to "advise", would be a disaster of the first order!

So, the current system is imperfect, and frustrating, and pretty demanding on the staff involved, but by and large it works. And I still think the most important qualification for the position is "to give a shit".

DEVELOPING A CROSS-CULTURAL INTERACTION IN A UNIVERSITY CLASSROOM

ABSTRACT

In our global educational environment the classroom consists of students from many countries and the interaction and friendships formed within these international classrooms can be a great asset to students. Students have the opportunity to learn about different cultures, different approaches, different perceptions and can establish international networks which can help them in business and socially. These advantages and opportunities can only be gained if there is interaction and understanding in the classroom.

This case study is an overview of action research conducted within a graduate international management class to develop interaction within the classroom. The case includes research objectives, the reasons for using action research, the methodology undertaken as part of the research, the outcomes in relation to students interaction and teaching formats and some of the difficulties the author encountered when changing from a quantitative research format to an action research format.

THE RESEARCH OBJECTIVE

The research objective was to enhance Australian and Overseas students' interaction. The criteria for selecting this research topic was:

1. It is important to student learning.
2. It is something which could be changed.
By changing behaviour the author considered this could change perceptions or at the least it would make the students think about interaction.
3. It was a research objective that could be managed within the class situation.
4. The research could be explained to the students, they could participate in the research and to a certain degree negotiate the research and their participation.
5. Permission could be gained from the students to participate in the research and confidentially could be maintained.
6. The results could be reported.

WHY SELECT ACTION RESEARCH

The research was designed to observe different behaviour in different settings. The activities which were implemented needed to be flexible and to allow unrestrained behaviour. Action research allows the researcher to change with the situation and watch what actually was happening in the different situations. The problem was verifying that these changes were actually happening and not just in the eyes of the researcher. In this research the evaluation of the programme and the interaction came from the students.¹

The researcher therefore felt action research was an ideal tool to observe and measurement of change in attitude or interaction would be evaluated by the students.

THE CLASSROOM AND BUSINESS SITUATION

The class traditionally consisted of Australian students with an English or European background, Australian students with Asian backgrounds and International students. International students mainly consisted of fee paying students from Asia who were in Australia to gain graduate qualifications - primarily Masters degree. Generally the Australian students with English, European and Asian backgrounds did mix and get to know each other but International students and Australian students did not interact. Many Australian students considered International students did not contribute in the class or to group work and in some cases there was direct opposition to working with International students. International students on the other hand considered that Australians were loud, took over the class and did not allow participation by the International students.

The students attitudes and objectives for the unit differed considerably. The perspective of the Australian students was primarily to pass a graduate unit. Interaction was not an aim or part of the study programme and in many cases it was deliberately avoided. The perspective of the international students was to pass a graduate unit but also to learn about another culture. This knowledge of another culture would help them in their search for an international position. This learning of another culture did not seem to include mixing with Australian students. It should be stated that this lack of interaction was noticed in the class and it may have differed from their behaviour when they first arrived in Australia i.e. it could have been learnt behaviour.

As well as the classroom situation there was comment in consulting reports on Australian International Business in relation to Australians being too individualistic and not working well in teams. This was considered to be interfering with the individual's, and Australian corporations', ability to succeed in an international setting.

Action research was introduced to try and overcome some of these barriers and introduce interaction for all students.

THE RESEARCH

The research consisted of four major aspects:

1. Altering the course outline to include interaction, research and participation by students.
2. Students must state advantages and disadvantages of cross-cultural interaction; these advantages and disadvantages were to be backed by interviews with cultural coordinators, students and journal articles.
The students must then develop strategies to introduce the advantages and overcome the disadvantages in class tutorials of one hour per week.
3. Each week one of the strategies was introduced. The semester was also divided into three different teaching formats.
 - (i) Week 1-5: The format consisted of workshops with all class members. Workshops and international games on culture and working and learning in a cross cultural situation. Students were given maximum exposure to different cultures both in lectures and tutorials.
 - (ii) Week 6-10: The format consisted of students working in small groups. These groups were changed so that people were not in the same group and the groups represented

people from many cultures and backgrounds. The groups discussing case studies which the students had completed and assessed. Students worked in these small groups for at least one hour each week and during this time the following recommendations from the assignments were put in place:

- Classify questions; restate the other persons ideas.
- Speak slowly, reduce slang.
- Appoint a chairperson to ensure everyone participates.
- Encourage others to speak about what they have to say before going onto your opinion.
- There is no right or wrong.
- Each individual has the right to express their cultural and linguistic identity.
- Small groups to encourage discussion among members.

(iii) **Week 11-14:** Students worked as one group and there was encouragement from the lecturer for open discussion. There was very little group work and interaction strategies were not introduced.

To reinforce what was happening in the classroom students also had to submit a paper on doing business in an Asian country and there was a group project to develop a strategy for conducting business in Asia.

4. Week 14 evaluation by the students.

The original outline of the research consisted of using workshops and small group work and introducing the interaction strategies every week for the whole semester. This format was altered as the researcher found due to their training in quantitative research it was personally uncomfortable not to introduce a comparison with the 'usual' teaching style; that is to have a measurable comparative base.

EVALUATION AND OBSERVATION OF THE PROJECT

The researcher's observations

Week 1 to 5: One student withdrew after the cross cultural workshop and this may have been due to the workshop being outside the student's cultural comfort zone. Students did seem to like the workshops and role play. One international student needed debriefing after the role play but he stayed with the class and was a very good class member. Participation and interaction was very good; students knew each others name.

Week 6 to 10: Participation was good and one female international student offered to be chairperson in a group of Australian and International students. An observer was nominated for each group but these students were continually involved in discussions and after two weeks the idea of observers was abandoned and everyone participated in groups. Students from different backgrounds and cultures left the class together and socialised after class but still everyone stayed in their same seating position in the classroom. The interaction in the classroom and outside the classroom appeared to be improving.

Week 11 to 14: Students were not put into groups but in the last two weeks all but one student changed their seating arrangement. Interaction in the class reduced but a change had taken place.

The student's observations

In week 14 students gave the researcher a written version of their attitude towards the interaction in the class: I asked them to compare the interaction in this class with their other classes.

The results were:

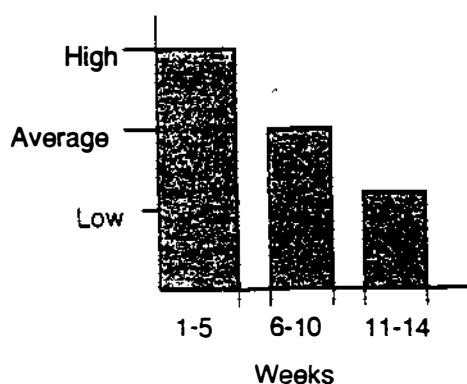
Week 1 to 5: Very good interaction. The attitude towards the workshops and role play were very good and the rating of interaction was high.

Week 6 to 10: Interaction was better than in most classes.

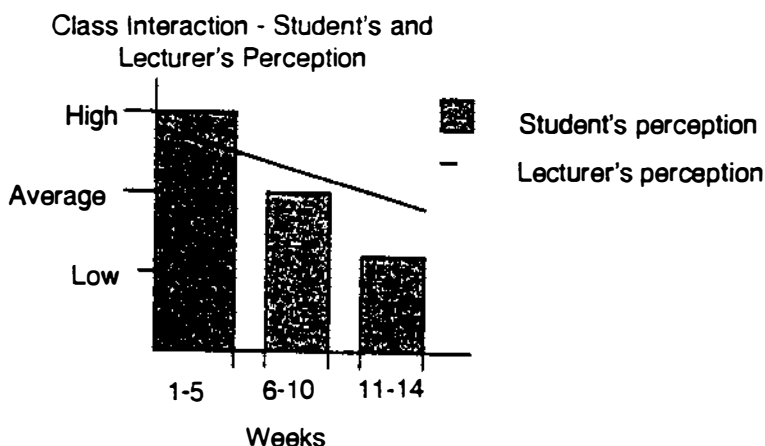
Week 11 to 14: Attitudes were diverse but all were negative.

The general consensus by the international students was those loud Australians have taken over again. The Australian students stated average to poor interaction while one Australian stated he felt the educational level was reduced because the International students would not contribute to discussions.

Class Interaction - Student's Perception



Contrary to the researcher's observations which would have graphed the interactions as reasonably level over week 1 to 10 and reducing a little in weeks 11 to 14, the students saw it as strong week 1 to 5, average to above average week 6 to 10 but weeks 11 to 14 were very poorly rated.



The lessons to be learnt are:

1. Student feedback is very important.
2. Interaction is something that lecturers need to work at and if you are setting an objective of interaction you must work at it every week. It cannot be introduced and then be expected to continue on its own. This is demanding for lecturers and may bring in quality issues such as training and time allocation for planning and implementation of interaction.
3. Workshops and role play in a larger group were more effective than small group work.
4. This type of interaction is too difficult for some students and it may result in some students withdrawing from the unit.
5. It is essential in this form of research that you keep to your original design. The researcher should not have changed the format in weeks 11-14 and eliminated the interaction strategies as they were of vital importance to the students, the lecturer and the interaction in class.

CONCLUSION

Interaction within the class room can be achieved by the use of workshops and small group work but it takes time and effort of the lecturers and support of the educational institutions. Action research is a tool which could be used to continually improve interaction and the class situation but the research must be well planned and researchers must be committed to this form of research and not be swayed by compromising with other forms of research which in this case reduced the overall effect of the research in weeks 11 to 14.

FOOTNOTE

- 1 This of course brings in the view from the participants, namely the students, but so does survey research which measures students attitudes.

**PLANNING A DEGREE PROGRAMME IN PODIATRY, BASED ON A MEDICAL
PROBLEM SOLVING CURRICULUM MODEL AND DEVELOPED FROM AN INDUSTRIAL
NEEDS ANALYSIS**

ABSTRACT

In 1992, the New Zealand National Diploma in Podiatry was upgraded to Bachelor of Health Science (Podiatry). The new programme was developed around a core of professional competencies identified from an industrial needs analysis. The New Zealand qualification now offers successful graduates a recognised academic qualification coupled with competence training to the level of professional registration to practice within the Commonwealth. The degree has been described as student centred with a problem based learning bias. The professional education programme prepares new graduates to cope with the challenges of the future. The academic programme enables students to apply scientific inquiry to clinical health care. Faculty members facilitate learning by providing relevant problem based experiences including patient problems, simulated and real, referring students to written text and scientific papers to critique; action projects and multimedia, as well as counselling, practical demonstration and supervised practice.

BACKGROUND

Writing an academic programme around a spine of professional competencies is not a new concept in higher education but this programme is the only one of its type in the world. In 1987, the Central Institute of Technology undertook an innovative curriculum review and commissioned an independent needs analysis to identify the competencies required by a podiatrist in the year 2000. To validate these competences, comparisons were made with other studies from around the world. The common features gave the New Zealand Analysis considerable ecological validity but little importance was placed on core skills such as practical treatment, judgement in implementing care, and continuing care. Since these skills were considered crucial to the work of a podiatrist all twelve were written as separate competencies. Statements of general learning outcomes for each competence were prepared and a job profile for the new graduate compiled. The degree programme was systematically written to meet each competence.

COURSE SYLLABUS

The new syllabus consists of five main academic strands which require to be studied at three different levels. These are Applied Science, Applied Anatomy & Physiology, Podiatric Medicine, Allied Pharmacology & Medical Science, and Clinical Studies. Core subjects are horizontally integrated across each year; then spiral throughout the three years of study. The programme attempts to provide a wide base academic experience in issues concerning the provision of health care within New Zealand and is specifically directed towards the vocational area of clinical podiatry. Clinical education is based on patient problem solving, students are required to gather information and interact with integrated teaching components which are part of a planned curriculum led, systematised approach to accelerated learning.

TEACHING STRATEGY

The student centred approach increases motivation to learn and emphasis on self directed learning prepares the graduate for life long education. Students tackle real patient problems including foot health delivery, medical science dilemmas and research issues. The appropriate choice of clinical problems in the early years of the course encourages the acquisition of relevant knowledge, such as, anatomy and physiology; biochemistry, molecular biology and immunology. By guided discovery techniques the student begins to show understanding of fundamental concepts and vocabulary for each discipline. The integrated body of relevant knowledge facilitates individual needs within an otherwise overcrowded curriculum. The integrated teaching approach required, helps reduce fragmentation, motivates and shapes positive attitudes, as well as promoting staff communication. In the planned and systematised approach to curriculum, a negotiated programme is designed for all students so that all the experiences necessary for their training are covered.

CLINICAL EDUCATION

Clinical training is concerned with effective time management and consists of three distinct levels of competence. Training clinics in year one, require students to refine basic podiatric core skills and learn how to apply problem orientated strategies to patient care. Comprehensive clinics in year two, access junior clinicians to foot care of low risk patient groups. Students undertake supervised patient management programmes designed to develop awareness of continuity of care. By year three, senior students have basic competencies in podiatric acumen and are expected to perform the duties of a junior practitioner in the total care of their patients, under the direct supervision of podiatric specialists. Valid and reliable assessment methods are chosen to match individual learning outcomes for each module and shared assignments, across subject areas, are encouraged.

DISCUSSION

Identification of professional competencies gave the vehicle to systematise the course programme and marry academic development with clinical training. The close relationship between the institute (or provider) and the industry (or consumer) facilitated mutual objectives and set target goals for the year 2000. The programme was written in twelve months and was required to meet very strict external criteria set by the New Zealand Qualifications Authority. Preparing staff to teach on the new programme presented the greatest challenge. The paradigm shift from the traditional course delivery necessitated considerable staff counselling and retraining. Student support material has proven to be very important. In the absence of a formal course review only an illuminative report is possible. The course is now however in its third year and seems to have survived with no major rewrites.

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THE CHALLENGE OF PEER ASSESSMENT

ABSTRACT

The use of peer assessment as an alternative to lecture assessment is an option which is being considered more frequently as we seek ways to relieve demands on lecturers' time. The decision to adopt peer assessment is not one which should be made lightly and there are many issues to consider.

In this workshop we will get the group to:

- *investigate reasons for adopting peer assessment techniques*
- *identify pitfalls and potential weaknesses of peer assessment*
- *identify the contributions that peer assessment can make to the learning process, and generate discussion of ways of implementing peer assessment effectively*

We will provide a bibliography of relevant literature.

We intend this workshop to be exploratory so that participants can share their own experiences and questions about peer assessment and work towards identifying ways of making peer assessment a workable alternative assessment technique.

INTRODUCTION

The term peer assessment may be taken to mean many things. From the literature there is a range of situations which are encompassed by the term:

- assessment by other students
- self assessment
- of oral presentations/viva
- of written work
- assignments, tests
- for marks
- for formative/feedback purposes
- for participation in group work/derive individual marks on group projects
- mark one-on-one, whole class or group marks an individual's performance
- peer group assessment
- collaborative assessment

WHY USE IT?

Peer assessment may be used for a number of purposes. It may be used formatively or summatively and it can take a range of forms. There are sound arguments for the benefits accruing to both staff and students but disadvantages which must also be considered.

	STAFF	STUDENTS
<u>ADVANTAGES</u>	<ul style="list-style-type: none"> - saves time - allows staff to focus on other aspects of teaching 	<ul style="list-style-type: none"> - enhanced learning outcomes - learn skill of self assessment and evaluation - learn to monitor own learning - develop the ability to judge their own work - see a greater range of performance standards - learn to evaluate and provide feedback to peers - opportunity to develop necessary professional skills - facilitates the development of deep approaches to learning - links to the cycle of peer review
<u>DISADVANTAGES</u>	<ul style="list-style-type: none"> - open to challenge - challenges traditional roles - increased preparation time (model answers, marking guides etc) 	<ul style="list-style-type: none"> - may be reluctant to participate - lack of knowledge of criteria - unfamiliarity with assessment techniques - reluctance to fail peers - challenges traditional staff & student roles - collusion between students

ISSUES RELATING TO THE USE OF PEER ASSESSMENT

- reliability
- training students to recognise and apply criteria
- encouraging students to take it seriously
- avoid collusion between students
- requires a shift from norm referenced assessment to criterion referenced
- student willingness to engage in peer or self assessment - conflict with their view of the role of the teacher

POSSIBLE SOLUTIONS TO MAJOR ISSUES

Participants generated solutions to the following issues:

- Training students to mark effectively
Modelling
Provide detailed criteria or seek consensus
Statistical manipulation of marks
Discussion
Trials/pilots
More than one piece of work to mark. Increased range and practice
Provide feedback to students on their marking
Provide opportunity for self marking and chance to resubmit work
- Changing students' attitudes and encouraging them to participate positively
Establish existing attitudes
Work through issues relating to learning and the real world
Identify current self and peer evaluation practices
Identify those with prior experience
- Dealing with the affective side of peer assessment (staff and students)
Reduce weight of assessment (at least at first)
Use information and statistics to show it is at least as reliable as other forms of assessment
Provide positive information about the benefits
Provide forum for emotional response
Provide opportunity for conflict resolution
Be proactive, explain, negotiate resolve
Use of class time for marking?
Students mark more than one paper
Share responsibility for marking

POSSIBLE STRATEGIES FOR INCORPORATING STUDENT SELF MARKING

- a) Self assessment schedules with marks justified and moderated by staff. Students prepare a statement of what they have achieved in the form of a self assessment schedule (original goals, criteria they believe should be applied, evidence to justify extent of achievement, judgment of success)
- b) Self marks moderated by peers -
One or more peers mark the individual. Self and peer score discrepancies are resolved by staff.
Use model answers prepared by staff.
- c) Criteria generated by peers -
Involve students in a group exercise to generate common criteria for the performance of the assignment. Criteria then provide a checklist which students complete and submit with the assignment.
- d) Weighting for the quality of self assessment -
Students receive marks for the quality of their self assessment, how critical/insightful.
Problem that this turns self assessment into another assignment and colludes with the student attitude that you only do something if you get marks for it. However it encourages critical self assessment
- e) Marks count after student has demonstrated competence in self assessment

- f) Use of learning contracts -
Learning contracts can include criteria for specific grades
- g) Grade contracting -
Students set own goals and specify which goal they want to aim for and describe the criteria that will indicate success. If they satisfy contracted requirements they are awarded the chosen grade

NECESSARY CONDITIONS

High trust, high integrity learning environment
 Students are rewarded for high integrity marking
 Marks are moderated by staff so that deviations from staff marks need to be justified
 Blind peer marking is used as check
 The achievement of effective self assessment is a major goal
 Students are provided with opportunity to practise and develop their skills
 Criteria against which achievement is to be judged is clear and unambiguous
 Effort is explicitly excluded as a criterion
 Ensure that the purpose of assessment is clear

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MULTIMEDIA: A PARADIGM SHIFT IN THE TEACHING OF THE BIOMECHANICS OF HUMAN MOVEMENT

ABSTRACT

In the teaching of para-clinical disciplines, such as physiotherapy and podiatry, there is often a mismatch between the conceptual scientific basis of the discipline and its clinical application. Biomechanics, the study of the motion of the body as governed by the laws of physics, is a central component of these disciplines. However, the subject is often perceived emotively by the student because it highlights, perhaps more than most, the interface between scientific concepts and clinical application.

Introduction of task analysis to biomechanics teaching is expected to improve learning by integrating biomechanical concepts with therapy practice. A novel piece of equipment, the V-scope Motion Monitor, designed for use by high-school physics teachers in class experiments on Newtonian motion, is used to facilitate interactive problem solving. A multimedia package, "Biomechanics Toolbox", then provides an exploratory interface with which to encourage transfer of learning between abstract biomechanical concepts and real-world case studies.

INTRODUCTION

In the teaching of para-clinical disciplines, such as physiotherapy, occupational therapy and podiatry, there is often a mismatch between the scientific basis of the discipline and its clinical application. In recent years, there has been an upward movement of these professions, which were formerly taught under an apprentice-like system, into the university tier. With such a move, the need to relate conceptual learning to its practical application has become emphasised.

One such conceptual framework which is accepted as a necessary component of all these disciplines is that of biomechanics, which is the study of the motion of the body as governed by the laws of physics. However, this particular subject is often emotive because it highlights, perhaps more than any other, the interface between scientific concepts and clinical application.

This paper and workshop aim at exploring the use of new technology in teaching biomechanics, to encourage interactive learning and transfer of learning from the abstract physical and mathematical concepts into everyday therapy encounters.

TASK ANALYSIS & CONCEPT MAPPING

In the systems approach of Gagne (1988), traditional topic-based teaching is replaced by task analysis, in which important and necessary jobs (e.g. case studies) are broken down into component objectives. In order to facilitate the introduction of such methods, an infrastructure needs to be set up by a dialogue between educator and colleagues.

In the case being considered, it became clear as a result of this dialogue, that introduction of task analysis to biomechanics teaching would require the development of technology which would

facilitate interactive problem solving. This would be expected to enhance integration of the biomechanical concepts with therapy practice. The concept map for a biomechanical understanding of pathological gait, for example (figure 1) reveals the existence of three basic hierarchical levels. The most fundamental of these consists of concepts such as mass, force, inertia etc., which are common to the study of mechanics in general, whilst the middle level consists of the application of these to human movement. The highest level incorporates this understanding of movement into theories of normal and pathological gait. Many of these concepts are very abstract, making interactive learning most appropriate (Mohnsen, et al, 1994).

A novel piece of equipment, the V-scope Motion Monitor (Litek Advanced Systems, Tel Aviv, Israel), was identified as fulfilling this specification of interactivity, since it provides a real-time motion data. It was, in fact, designed for use by physics teachers in class experiments on Newtonian motion. The combination of both commercial and purpose-written software for controlling the V-scope facilitates quick and user-friendly capture of motion and display as a combination of animation and graphs of biomechanical parameters. This enables a total interaction (cognitive, not merely psychomotor) between the student and the concepts being studied.

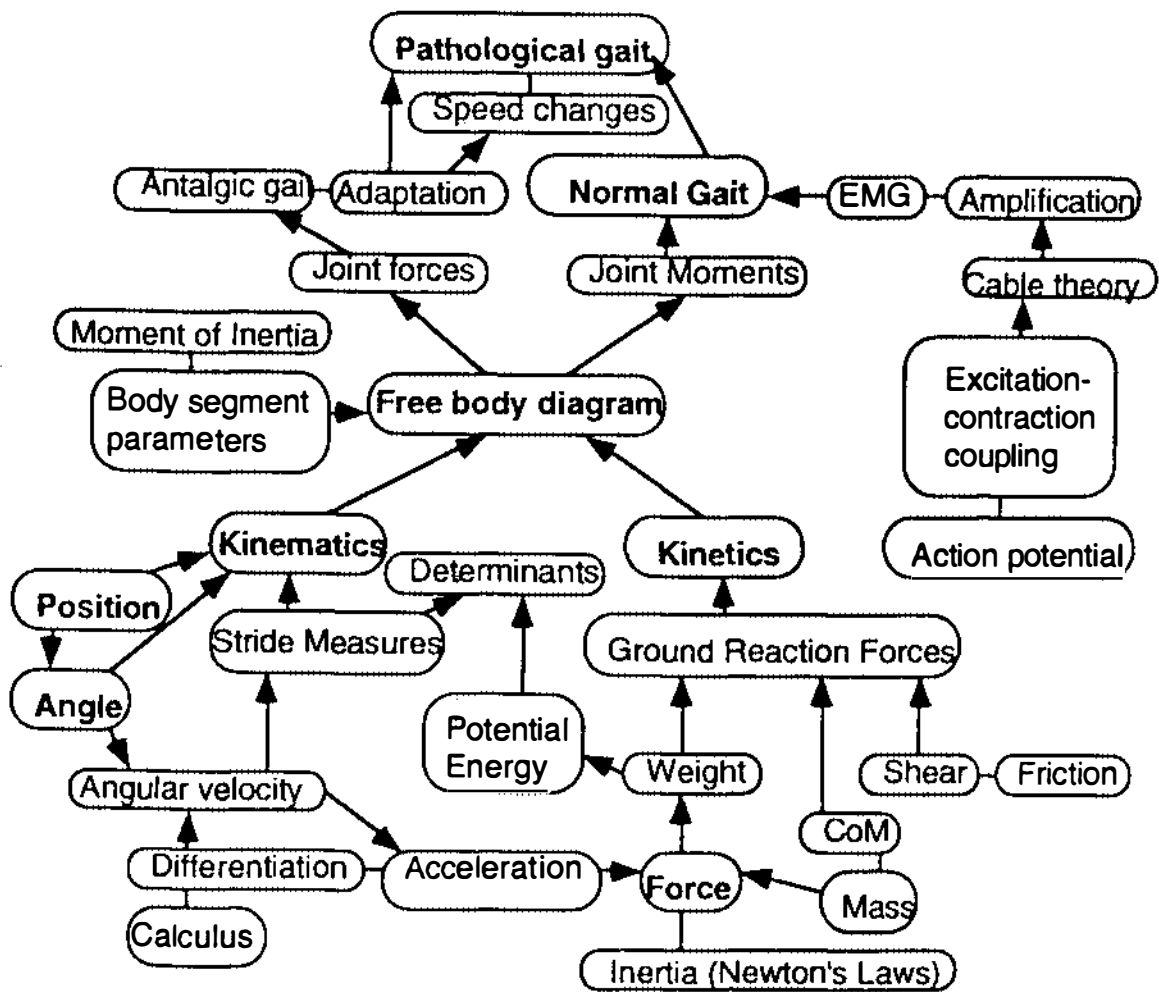


Fig. 1: Concept map for bio-mechanical understanding of pathological gait.

TRANSFER OF LEARNING

Once the key components of the concept map have been studied and learned, a multimedia package, "Gait Toolbox", is then introduced to the students. This contains case studies of patients with a variety of walking disorders. Video, animation and graphs of abstract biomechanical quantities are presented, and access to a database of normal and pathological gaits is encouraged. Novel methods of presenting the data are used, with a common terminology which is at once precise and based soundly in the principles of mechanics, whilst at the same time being familiar to the student.

An evaluation of the use of this new medium and approach will take place during its introduction, and a detailed study of the issues involved in its design is currently underway.

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A CROSS-CULTURAL CURRICULUM DEVELOPMENT PROJECT IN ELECTRICAL ENGINEERING AT CURTIN UNIVERSITY

ABSTRACT

This paper describes a teaching initiative in the Department of Electrical Engineering at Curtin University. The initiative involved the development of a new laboratory program for first year engineering students with the specific aims of enhancing team work and communication skills. Action research was used to implement the new program which also focussed on cross cultural co-operation. Planning, implementation and student reaction to the program are discussed in the paper.

BACKGROUND

The cross-cultural curriculum development project was one of several equity and access initiatives funded by DEET at Curtin University in 1994. Academic staff were invited to submit proposals for projects which would lead to cross-cultural development of some aspect of their teaching. Successful applicants were then expected to implement their proposals using action research - an ongoing process facilitated by regular meetings with a group leader and discussions with peers who were also involved in CCCD projects.

The unit chosen for the project - Electrical Engineering 102, is an introductory unit taken by all first year engineering students at Curtin University. Class contact is two hours per week consisting of a one hour lecture and one hour laboratory session. Assessment has been heavily weighted towards the final examination (80%). Having previously taught the unit, I was well aware of the difficulties it posed to students. Two features of the unit which fitted in well with the CCCD project were:

- (i) a large proportion of the students are from non-English speaking backgrounds. (40-50%)
- (ii) the failure rate is consistently around 40% - calling for some improvement in the teaching/learning process.

The laboratory component of the unit - based on a voluminous laboratory manual, full of detailed information, aroused little enthusiasm with students and appeared to have minimal impact on the learning process. It was decided to implement a new laboratory program which would address these failings and enhance the learning experience of the students. Specific aims of the new program were:

- (i) to get local and NESB students to work effectively in teams.
- (ii) to improve communication skills of students (both oral and written).

Modern engineers work in a global environment, hence the ability to work in mixed teams and communicate effectively are highly desirable attributes of engineering students. Both, are frequently cited as characteristics of engineering graduates which need improving [1]. Employers are quoted in reference [1] " We have engineers in our company who do terrific technical work, but they can't communicate what they are doing." Whilst it may be thought that this is only likely to apply to students from non-English speaking backgrounds, experience has shown that local students who choose engineering courses also demonstrate much stronger numerate rather than literate ability. Particularly in the USA, courses emphasizing teamwork are now being introduced into the undergraduate curriculum [2], [3].

PLANNING AND IMPLEMENTATION OF THE PROJECT

Project planning

Action research involves a sequence of processes - formulation of a plan, implementation of the plan and reflection on the results - which form a closed loop. Successive iterations around the loop eventually lead to the desired outcome. The dynamic nature of action research is at odds with the tight, prescriptive approach epitomised by the old laboratory manual, hence it was decided to abandon this manual and replace it with a new program of investigative laboratory exercises. For example:

LAB 2: Display and sketch ac voltage and current waveforms for an R-L load and hence determine the phase shift.

Students are provided with, variable R and L components, an ac signal generator and a 2 channel CRO.

Associated with the laboratories, all students provide a blank exercise book for recording their laboratory work (with numbered pages to avoid additions and subtractions of work).

Each of the five laboratory classes (18-20 students) was divided into teams of 3 - carefully chosen from class lists to be cross-cultural. At the first laboratory session, students were briefed on the importance of team work in the industrial environment. It was also impressed on students that since the laboratories were now open-ended investigations, it was essential that they meet prior to the laboratory session to plan their activity in the laboratory. The laboratory reports were to consist of three distinct sections:

- (i) *pre-laboratory* - circuit connections and a set of steps or measurements to be made in the laboratory.
- (ii) *laboratory results* - waveforms and recorded experimental values.
- (iii) *conclusions* - explanation of results, supporting calculations, comments, etc.

Unit assessment was revised to give more weight to the laboratories and assignments. 60% final examination

- 10% mid semester test
- 10% laboratory book
- 10% assignment
- 10% laboratory test or presentation

Implementation of project

Following an introduction in the first week, the program ran as a series of two laboratory sessions followed by a tutorial/discussion session, ie. a three week cycle, repeated three times. After each set of two laboratories the laboratory books were collected and assessed - this provided an opportunity to gauge students progress and provide feedback on the laboratory activities. Marking around 90 laboratory books proved one of the more onerous aspects of the project.

In order to further emphasise team work, assignments for the semester were allocated to individual teams. Assignment work typically involves a simple design exercise which can now be made more demanding (and interesting). Teams were given a choice of giving an oral presentation of their assignment or having a laboratory test - interestingly all students chose the laboratory test, indicating some apprehension about speaking in public.

The actual laboratory sessions were supervised by two people - this was essential for students to be able to ask questions and get circuits working as well as comment on their results. In short, the sessions became much more interactive than in the past, with the emphasis being on learning from the laboratory activity rather than simply performing set exercises to obtain predictable results.

Regular discussions with the action research facilitator and others involved in CCCD projects allowed modifications to be made at the end of each cycle to overcome perceived weaknesses, eg. how to obtain feedback? - by interviewing students and collecting laboratory books.

PROJECT OUTCOMES

At the end of the semester, students were asked to complete a survey plus they were asked to take part in a discussion about the project. They provided some interesting feedback:

- (i) Students generally appreciated the new, investigative approach to laboratories, they felt they had learned more and enjoyed making up their own experiments. Evidence of learning was seen in the laboratory tests when students (in their teams) were asked to connect and test a previously unseen circuit. Almost all accomplished this at the first attempt - those unsuccessful were asked to repeat the test the following week.
- (ii) The sight of a completely blank laboratory manual, coupled with very brief descriptions of what was expected in the laboratory, seemed unsettling and students asked for more guidance to be given as to the requirements of the laboratory sessions and the format of the laboratory reports.
- (iii) Socialisation had occurred within teams (all students at least knew the names and how to contact other team members). The most effective teams seemed to be those containing one Australian and two Asians, the alternate mix of two Australian and one Asian sometimes led to the Asian feeling excluded. I had several visits from individual students to complain about their partners ("difficult to contact" or "not contributing"). These students expected me to provide a solution, eg. by changing groups, but were told that it was up to them to try and resolve the situation - as they would have to do in a real life situation. Individual laboratory books were useful in this respect as "good" students felt they had some way of demonstrating their input.

- (iv) Nearly all laboratories involved the use of a particular instrument (the CRO). Students were apprehensive about using this instrument without any detailed instructions. While I would not want to revert to the detailed description given in the old laboratory manual, perhaps a session could be devoted to "playing with the instrument" and getting students to write their own users guide.

Having completed one cycle of the new program I now have enough information with which to plan an improved version of the program for first semester 1995. This follows the action research feedback process with a ripple effect involving other staff and students. 1995 will be a significant test for the new program as enrolment in the unit will be over 200 and the sessions will be mostly taken by postgraduate students.

Reflecting on the original aims and outcomes of the program, I consider the first aim, of getting students to work effectively in cross-cultural teams, has been largely achieved. The second aim, relating to improved communication skills, has been partially successful - students communicated effectively in the laboratory and within their teams but outside of this there was no evidence of improved presentation skills, either oral or written. These are aspects of the program to be improved on the next pass.

In conclusion, through my involvement with the CCCD project I was able to devise a learning program which was relevant, rewarding and enjoyable - both for the first year engineering students and myself as the facilitator.

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TEACHING TECHNOLOGY STUDIES CONSTRUCTIVELY

ABSTRACT

Units within the Technology Studies degree programme at Edith Cowan University involve students with a large range of prior knowledge. A third year unit "Communications Technology" has been restructured, within a constructivist framework, to accommodate the varying requirements of students. This paper describes the preliminary findings of this new approach.

BACKGROUND TO THE STUDY

The Bachelor of Applied Science (Technology Studies) degree programme at Edith Cowan University requires students to take twelve units of technology studies in parallel with ten units of their supporting major. Students enter the degree programme with a range of prior science knowledge and experience both of which have widened further by the time students enter their third year.

The third year unit, Communications Technology, has several roles within the course. In addition to covering the content area associated with communications technology, it is the second of two units used to teach physics literacy through the vehicle of technology. It also draws on material in previous units to meet individual student needs.

THE PROBLEM

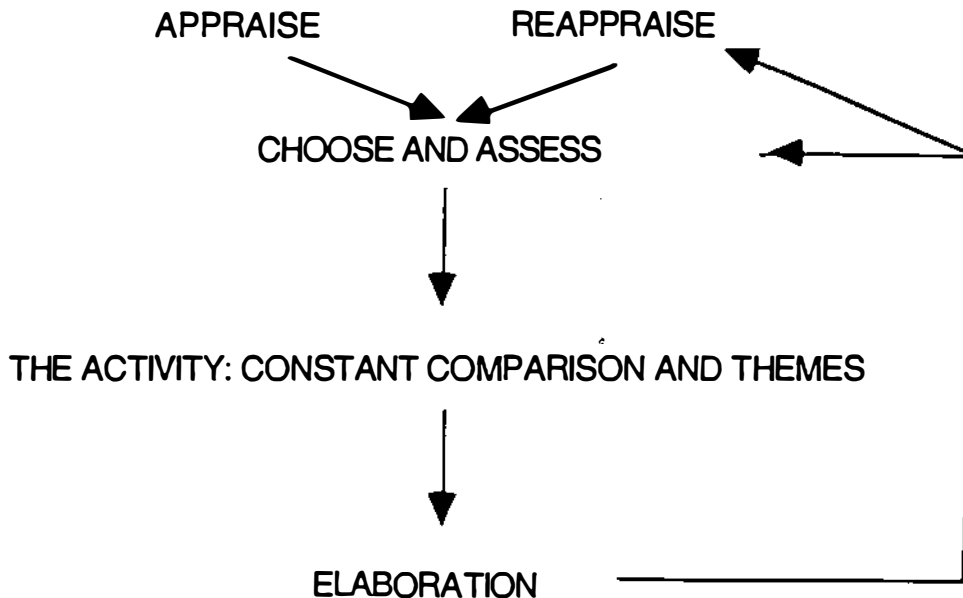
Any current unit on communications technology faces the difficulty of dealing appropriately with the explosion in communications technology. In addition students have wide ranging prior knowledge of physics (from year nine science to third year university physics); diverse interests and a potential wide range of areas for application of their knowledge associated with this technology.

Faced with such diversity of background, interest and application, the lecturer is tempted to aim at the middle ground and accommodate the extremes in the best way possible. Practically this can result in compressing the material into a first year physics format. This was not acceptable as it:

- devalued the student's present analytical skills;
- failed to extend students and give them 'third year' confidence;
- would bore those with advanced physics skills;
- would effectively exclude those with little physics background from meaningful science learning forcing them to adopt techniques based purely on strategies for passing examinations;
- would increase the insecurity of those with little physics knowledge; and
- runs counter to the philosophy of the degree which attempts to cater for all levels of knowledge.

THE SOLUTION TRIALED IN 1994

The solution trialed in 1994 used a model developed by Fetherstonhaugh (1993). Based on personal construct psychology (Kelly, 1955) and described by Fetherston (1994), this model uses theoretical propositions made explicit through five key learning operations shown in Figure 1



During the 'Appraise' phase both the teacher's and student's constructs are made explicit and then used as a basis for choice in order of subsequent content. Students then 'Choose and Assess', which places the responsibility for learning on the student and forces students to predict which of their construct would be most useful to the intended learning activity. Throughout 'The activity' phase there is an emphasis on constant comparisons; their ideas versus each others; their ideas versus texts. The learning process then moves to the 'Elaborate' phase where students apply and consolidate their new knowledge. Finally they 'occasionally Reappraise' and monitor the changes in their constructs.

Existing materials were easily adapted to this new approach. The lecture and lab/tutorial components were separated and the lectures were used to introduce students to the current use of new communications technologies. The structure of the lab/tutorials was designed to be sufficiently flexible to permit each student to start from their current knowledge (in line with the above approach) and build on this.

Students worked through modules in small groups using discussion within their groups in each of the phases (Appraise, Choose and Assess, The activity, Elaborate and Reappraise) as an essential part of the learning process. They were asked to use journals to record their learning progress. It was expected that the journal would act as a powerful learning tool by forcing students to verbalise the learning process and thereby assisting with appraisal of their learning. The 'Elaborate' phase encouraged students to address links to previous units and to address interests arising from the diversity of their supporting majors. It soon became obvious that the more thoughtful groups also saw the connections to the lecture programme. The lecturer was available as a resource for use by groups throughout the process.

IMPLEMENTATION

Evaluation in this pilot project was restricted to qualitative data from students. The students' initial reaction, on being told about the way the lab/tutorial section of the unit would run, was one of stunned silence. The lecturer gave students an opportunity to talk among themselves and articulate some of their initial fears. When asked to describe how they felt at the start of the unit, students mentioned feelings of uncertainty, confusion and difficulty. Typical responses were:

‘Difficult to understand what was required.’

‘I found it a little daunting to begin with but eventually got the hang of it.’

‘Confusing but gradually got used to it.’

‘Almost lost at the start of semester.’

This is not surprising given how different this approach was to the rest of the units which they had studied. Similar initial reactions were observed by Fetherston when working with a group of year nine students (Fetherston 1993)

When asked to describe the changes which happened during the semester, the picture changed considerably with most students recording positive outcomes. Typical comments included:

‘Have learned to view most things from different angles and perspectives and to learn in a more mature way.’

‘Gained a greater independence. Taught myself some of the concepts that are related to physics.’

One group however continued to resist the change until the last few weeks of semester. One member documented this graphically:

‘Perhaps the greatest lesson my group learnt was how reliant we had all become on direction by a lecturer or a lab assistant. We were given the option in this unit of pursuing whichever direction took our fancy as we had all had similar physics background. To be given freedom of this type was so unusual in our collective 50 years of scholastic experience (certainly since kindergarten) that we spent far more time looking for the trap and the usual hoops that you have to jump through, than in contemplating where we really wanted to go. In the end we conservatively plodded our way through the physics we already knew again, rather than grasp the golden ring of opportunity.’

This group had the best knowledge of physics but also a strong initial conviction that physics was about facts and not a subject for discussion, they were also cynical over the use of the journal. It appears that their epistemology regarding learning and the nature of science could well have inhibited change. This was in stark contrast to most of the students who made comments about the use of the journal like:

‘I recommend the use of a journal as suggested in the unit outline. The concept of a journal vocalising the learning process can be successful if utilised correctly. However I must confess to finding it difficult at times to write down what I was thinking or

feeling. It did not seem to be important if it did not involve facts. After practise the technique becomes a little easier and worthwhile even though it is time consuming.'

Despite the difficulty experienced by this one group, on balance the trial appears to have produced more real learning, interest and application than the alternative of giving a formal lecture course to a sea of faces, half of which were bored and the other half confused.

In most groups the amount of work done was considerable and commented on negatively by two students who had found the pressure of their responsibility to other members of the group onerous. The approach proved to be particularly empowering to the groups of students with the least physics background and this is an impressive and encouraging result. One of these students expressed this very clearly:

'The first day I walked into Communications Technology, I had little, to no physics knowledge.....This all meant that I didn't feel too good about having to do a unit, which had a heavy emphasis on physics. But I soon found out, through discussions and experiments, that physics is interesting, relevant and easy to learn, but that might only be in Communications Technology!!!'

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EVALUATING OUTCOMES IN PHYSIOTHERAPY STUDENTS

ABSTRACT

Evaluating outcomes in physiotherapy students focuses on their competency to enter the profession on graduation. Evaluation is equal to the whole constellation of values for any program, including the outcome of its graduates, divided by the complexities in criteria and expectations of the stakeholders. That is, an observed value is compared with some standard.

In terms of function, standards may provide a benchmark or basic goal for training providers, industry and training bodies, or educators, as well as state and federal authorities. They may be applied in considering registration, certification, accreditation and other forms of recognition of skills, or for setting curricula and in assessment of various kinds. Standards can be expressed in different ways. It may be suggested that consideration be given to a number of factors when setting any level. These include:

- (a) their eventual use;*
- (b) the audiences;*
- (c) operational and cultural requirements;*
- (d) the range of workplace and occupational situations.*

This paper discusses the development of competency standards for physiotherapists in Australia (Liston Bullock & Cole, 1994), and their application to evaluating outcomes in physiotherapy students:—their competence to practise.

INTRODUCTION

In a discussion about evaluation, Stufflebeam & Shinkfield (1985) see “three main uses; improvement, accountability, and enlightenment” (p7). By providing information about a current program through self-study reporting, with external confirmation and clarification, there may be improvement (or maintenance) in the quality of the program. Accountability may be achieved through providing written evidence as feedback to interested parties about the program and its outcomes/products, that is, the graduates. *Enlightenment* is a comfortable and comforting term where judgement and other subjective approaches are used instead of the research/investigative model (Glass, 1980; Cronbach, 1963). Furthermore, Stake (1967) proposes the equation that evaluation is equal to the whole constellation of values for any program, divided by the complexities in criteria and expectations of the stakeholders. That is, an observed value is compared with some standard.

STANDARDS

Standards may be applied to provide criteria for evaluation purposes. They may be norm-referenced (as in relation to a *passing standard* set previously by a group of examiners), task-referenced (as in *objectives* stated for observable tasks such as *matching, naming, selecting, recognising*) or criterion-referenced (as when a *performance* is compared with stages on a scale of increasing competence).

Standards may be deemed to be necessary by governments — for example to enable industrial groups, unions, registration boards and the like to ensure that all workers, employees, professionals, or practitioners meet a minimum *standard of performance in a range of skills/abilities* (Locke and Latham 1990). Educationalists and professional bodies may set standards for the education or training of personnel (Jarvis 1983). These should match the minimum standard required by a newly qualified or graduated trainee or professional. Where quality assurance is required or desired, standard setting means that there is a reference point against which to judge the quality and ensure that it is maintained.

Although most issues perceived to be quantitative have a qualitative basis, the notion of standard setting is more difficult in *qualitative* issues than in *quantitative* ones. Ambiguity may exist where competence can be expressed only in higher order cognitive skill terms. The holistic nature of performance cannot be ignored. Consideration of some means of expressing the need for performance to be based on the combination of knowledge, skills, abilities and attitudes poses a problem for those setting standards.

Glass (1978) questions the use of the term *minimal competence* which suggests the *essential, least permissible* level. This appears on a continuum from absence to something especially excellent, and is extremely difficult to determine. In fact, judges disagree when seeking to determine these levels of *minimal competence*, and psychologically there is no basis for the concept. Placing a focus upon desired competencies for a particular profession may, however, offer a means by which a new or existing curriculum can be evaluated, particularly if the competencies have been defined in relation to the current needs in professional practice (Myers, 1990). While educators may have specified their objectives carefully, the defining of needed competencies may present an opportunity for a more integrated approach to teaching/learning and to student assessment (May, 1977; Beenhaker, 1987; Liston, 1993).

Whilst acknowledging the *arbitrary* nature of standard setting, Scriven (1978) suggests that this is better than nothing at all! Glass (1978), in contrast, feels that “arbitrariness is no bogeyman”, yet that “nothing is safer” (p242)! So the argument is about the *absolute* nature of standards. In order to make a judgement about the value of anything or of anyone’s performance, then some agreed *level* (with safety margins) may need to be determined or set.

OUTCOMES EVALUATION

Evaluation of outcomes in a higher education context, focuses on students’ ability to apply acquired knowledge and reasoning skills competently. The use of educational strategies which encourage students to explore knowledge, generate new knowledge, plan, learn, and reason, will promote metacognition and reflection on graduation. Valuing all of the facets of their educational experience will foster a desire for lifelong learning in graduates.

There are six Physiotherapy Schools in universities in Australia, and each of them has a unique curriculum, differing teaching strategies, differing expectations and standards. For the physiotherapy profession, there are no *benchmarks*, no National or State examinations to determine eligibility for registration to practise, and no professional accreditation of the six undergraduate programs. Evaluation of outcomes in each of these programs relies on each School specifying its own criteria, its own standards, and its own requirements in terms of sources of evidence for making judgements and decisions about who graduates and who does not.

The students are assessed against some predetermined and ill-defined standards by assessors who gather evidence from a range of activities; such as essays, multiple-choice and short-answer written assessments, practical tests, viva-voce examinations, clinical observations and the like; and make judgements about the levels of competency of individuals. Those assessing or making judgements need to have a means to know what the expectations are — that is, an understanding of the competencies and knowledge base being assessed. Furthermore, the assessors require the *ability* to make observations and judgements, keep records, obey decision-making rules, and be open to independent monitoring.

COMPETENCIES IN PROFESSIONAL EDUCATION

Competency-standards for the professions may provide an accountability mechanism for evaluating the outcomes (the graduates), whilst not compromising the unique nature of individual programs. In addition, although higher education is often purported to be about *excellence*, not competence *per se*, in reality a pass mark/minimum standard or cut off point is invariably set!

The *process* of education is not demeaned through defining competencies. Indeed the *process* is one of the outcomes, because the fostering, nurturing and cultivating aspects of it, which were identified by John Dewey in 1916, are reflected by competent graduates.

Competencies are *any* attributes of an individual which contribute to performance. Surely knowledge is the foundation for competent performance. Striving for *excellence* is more likely to be fostered by nurturing learners and cultivating competencies than by preparing for success in norm-referenced methods of assessment. The reason for developing and reviewing course objectives and the performance criteria which are to be assessed is not to stultify educational programs. Rather, it is because of the understanding that there are continuously evolving contemporary needs which require competencies to be expressed with ever greater precision. Competencies include knowledge, thinking processes, manual skills, attitudes, motivations and beliefs. Confusion and stultification that result from arguing over semantics is unproductive.

APPLYING COMPETENCY-STANDARDS IN PHYSIOTHERAPY EDUCATION

The physiotherapy undergraduate program conducted at the Curtin University School of Physiotherapy, like the majority of professional programs in higher education, provides a linkage to the graduates' ultimate workplace settings by incorporating clinical education. In the final year of the program, the major component is clinical education across a range of settings and circumstances which provide experiences in occupational situations. What better way to introduce an interface between the didactic and artificial university education setting and the real world/workplace competencies that are required by the profession? Honing skills and improving social literacy are important for physiotherapy students. Whether the new graduate meets the competency level necessary in a particular workplace setting is only the concern of the university when achievement in clinical settings is assessed. This aspect of assessment of the competency of the student should incorporate any professional standards that have been developed.

CONCLUSION

Perhaps *standard* is an alternative word used to set a level of performance, where formal examination or evaluation cannot ensure that an objective has been met. In any event, both *objectives* and *standards* require agreed conventions and professional judgement in which there may be disagreement about decisions when it comes to scoring, and passing or failing.

In Australia, Competency Standards have recently been developed by the physiotherapy profession. These standards are meant to apply to new graduates, are open to review and change, and have been accepted by Schools, Registration Boards, the Australian Examining Council for Overseas Physiotherapists and the Australian Physiotherapy Association (Liston, Bullock & Cole, 1994). The influence of competency standards in curriculum development and assessment of students, as well as in a process of accreditation of physiotherapy education programs is worthy of informed debate prior to considering any implementation. This is especially in view of the focus of the Federal Government on auditing quality procedures in higher education, which requires educational institutions and programs to have quality assurance processes in place.

Professional accreditation — assessing whether programs produce graduates who meet entry-level competency standards — is more closely linked to eligibility for registration. It may be that the only reliable means of assessing whether all physiotherapists seeking to register initially in Australia meet the entry-level competency standards, is for them to undertake an examination *after* graduation.

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ASSESSMENT OF WRITING IN MULTICULTURAL SETTINGS

ABSTRACT

Assessment in higher education has many purposes, the most important of which is to encourage students to learn. There is considerable evidence that the quality of student learning is adversely affected by inappropriate assessment methods (Rowntree, 1977). Surface approaches to learning (memorisation rather than deeper understanding) are adopted by students when study demands are excessive and students are under pressure. There is thus a conflict between the summative objectives of assessment, selecting, grading and maintaining standards, and the formative role of encouraging learning. In a multicultural learning context, as characterised in tertiary learning contexts, the formative role of assessment procedures is critical in developing self-directed learning strategies. Assessment strategies should therefore promote and match these higher order cognitive activities. Assessment then, should form an integral part of the learning process. It is also a way of helping students to learn more effectively (Ramsden, 1992).

In this article, several strategies will be presented which aim to enhance the quality of student writing., by considering the different perceptions students may have of essays and the influences that cultures exert on writing patterns.

THE MULTICULTURAL CONTEXT

In the context of an increasingly diverse and multi-cultural university, questions about the quality of **student learning** are foregrounded. When there is linguistic and cultural diversity there is also complexity in the range of problems encountered by students as they learn to cope with the demands of academic study.

The link between **student approaches to learning and assessment methods** has long been emphasised in the literature (Ramsden 1992; Watkins 1986). No teacher or academic could dispute the claim that one of the central functions of assessment is to encourage and assist students to learn. The increasingly multicultural environment in Australia and its attendant student diversity requires that greater attention be given to promoting understanding and acceptance of assessment methods. The diverse cultural backgrounds of students means that there are major differences in expectations and approaches to study (Ballard & Clancy, 1991). Such differences need to be taken into account when assessing students from different cultural backgrounds so that students can meet the requirements of assessment tasks.

Many international students are aware that different learning strategies and attitudes to knowledge are required for success at Australian institutions (Volet & Kee, 1993). It is also important to bear in mind that the problems encountered by students from overseas are within the range of difficulties faced by Australian students in so far as both groups may need to improve academic skills, writing approaches and critical thinking.

longer faced with the stigma of attending literacy classes, and who can improve job related literacy and may have increased chances of promotion.

The problem is that workplace trainers who are competent in delivery of practical training to workers, may not have sufficient knowledge about literacy to undertake this training. Most do not have formal teacher qualifications. In fields where there is a large workforce with other language backgrounds, the trainers may be familiar with programs such as the Workplace English Language and Literacy program (WELL). These programs are taught by qualified teachers who often have further qualifications and/or experience in teaching English as a second or other language. However, not all trainers understand literacy issues or the need to have qualified people teach it. If they are not aware of the literacy requirements of workers, or of the issues, they will not be able to alert employers to the need to increase workers' literacy skills.

In the course I taught (Milton, 1995) I began by asking the students to write down everything they had done that day that required literacy. While sharing the lists with others, they discovered that there were different ideas about what counted as literacy. Following a discussion, they were asked to develop a model and a definition of literacy.

Group One developed a very basic model. Their definition of literacy was:

"To interpret information with understanding"

Although the definition is broad and non specific the model indicated that the group meant the production and interpretation of visual information through reading and writing. This model of visual information through reading and writing. This model only considers the basic skills of reading and writing and does not consider the functional aspect literacy, nor does it consider prior knowledge, context or social factors.

Group Two developed a more sophisticated model. Their definition of literacy was:

"Literacy is the ability to read and write, to effectively comprehend the communications within the context intended and to successfully transfer/disseminate information"

Group Two began with a traditional definition, then added context and a notion of social interaction. In the group's verbal explanation of their definition they said literacy was more than just being able to read and write, that it was important to be able to interact and pass on the information and use the information in different situations, hence the concept of "transfer".

Group Three developed a model which was somewhere between the other two. It also included speaking and listening but did not include writing. The group members were unable to agree on a definition, so submitted four brief ones.

After analysing this exercise I felt most of the students had begun the course with a traditional understanding of literacy. I was aware that the models and definitions given could have been partly influenced by my initial discussion of course content and the first exercise describe above. I feel, however, that the models represented a fairly good depiction of their understanding at the commencement of the course.

I also inquired about the students' perceptions of literacy needs in their own workplaces. At the beginning of the semester, many of the students claimed that there was no need for literacy

improvement in their workplace and that everyone they had contact with had sufficient literacy skills to meet workplace demands.

During another session I ascertained the trainers' understanding of what happens when we read and how we learn to read. I found that their understanding was mainly based on how they were taught at school, or insights gained from watching their own children to read. Apart from the two trainers with teaching qualifications, they did not have any knowledge of theoretical models of reading or literacy and knew little about issues related to literacy teaching or learning.

The course introduced trainers to the work of prominent theorists and researchers in the field of adult literacy, particularly as it relates to workplace education. The course also covered adult learning theory, learning styles, literacy contexts, curriculum and program planning, negotiation, and assessment. The course also introduced the notions of genre and critical literacy. The course aimed to make them aware of literacy, to be able to identify problems which were literacy related and to recognise the need for qualified literacy teachers to be part of communication and literacy training programs.

To increase the trainers' understanding of the literacy demands of their workplaces we examined a number of texts from their workplaces, and they were required to design an action research plan in which they addressed some aspect of literacy.

At the end of the course, students were assigned to their original groups, given their models and asked to review them. Groups two and three added to their models the influence of prior knowledge and experience, motivation, learning and numeracy. Group one developed a new model which was influenced by the notion of multiple literacies in different contexts.

I have found that trainers first have to learn about literacy, and about texts, and then be able to relate it to their own workplaces, before it can become part of their repertoire of understanding.

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THE IMPACT OF NATIONAL QUALITY MANAGEMENT REQUIREMENTS ON TEACHING AND LEARNING IN AUSTRALIAN UNIVERSITIES

ABSTRACT

This paper (1) explores several background issues in connection with the Quality Audits (2) discusses the possible effects on University culture (3) focuses on the effects of the audits on teaching and learning. Firstly, background information of the Quality Audits includes: historical background, theoretical perspective, philosophical and political perspectives, the structure of the Committee, the modus operandi of the Committee, requirements on the universities and response by universities. Secondly, it reflects on four major areas affecting teaching and learning culture in relation to the background: culture of teaching and learning; management issues; funding issues and industrial issues. Finally information from the two previous sections is drawn to provide the basis for the crucial issue: the impact of national quality management requirements on teaching in Australian universities. The paper leaves the reader with the question: How do you demonstrate quality teaching?

INTRODUCTION

Quality Audits of universities are a recent innovation in an increasingly strong push by the Commonwealth to maintain control of University education. It will be demonstrated that examination of this process can aid individual teachers in their definition of effective teaching and in determining teaching practice which is congruent with Faculty, University and National requirements.

BACKGROUND

There has been an increasingly national and international move to implement the principles of Total Quality Management (TQM) in higher education by provision of a series of funding and reward arrangements which encourage higher education to focus on predetermined performance indicators and meta criteria.

Historical Background

Quality Audits are conducted by 'The Committee for Quality Assurance in Higher Education' and results are presented to the federal Minister for Employment Education and Training for consideration in the distribution of funds which may not exceed 5% of the universities operating budget and are to be used for maintenance or improvement in quality. The funds come from the National Priority Reserve Fund and are distributed under section 18 of the 'Funding of higher education Act 1988'. The Committee was established on the 9th of November in 1992 and there is currently some debate about its continuance.

Theoretical perspective

Our current practice in Quality Audits originates from an industry background of TQM. The language of the Audits clearly indicates this: 'consumer', 'client' and 'service provider'. Further, there is a focus on performance indicators and meta criteria and a linkage of these to funding (Hattie et al 1991). The current perspectives in education are borrowed from economics and commerce and are focusing on performance indicators.

Political perspectives

Since the 1950's there has been an increasingly strong move towards Commonwealth control of higher education. (Marshall, A. 1992). There is also a move towards international direction in higher education (Hattie et al 1991). In 1988 the White Paper indicated that funding would become linked to the use of performance indicators. In 1992 the foundations for the Quality Audit were laid by the National Board of Employment Education and Training in the document 'Achieving Quality'. In 1993 the first Quality Audit took place and by late 1994 the continuance of the process was being questioned.

Structure of the Committee

The Committee for Quality Assurance in higher education reports to the Federal Minister for Education Employment and Training after having received advice from the local Review Teams. The secretariat for the Committee is located in the Quality Enhancement and Assurance Section of the Higher Education Division of the Commonwealth Department of Employment Education and Training (Committee for Quality Assurance in Higher Education [CQAHE] 1994a).

Modus Operandi of the Committee

The train of events that results in the Committee making recommendations to the minister is as follows:

1. The Minister appoints the Committee.
2. The Committee appoints the Review Teams.
3. Members of the NUS of universities request to be audited and prepare a quality portfolio.
4. The University is visited by the Review Team.
5. The Review team evaluates the portfolio and prepares a draft report which it submits to the Committee.
6. The Committee finalises the report and prepares a Report on the years Quality Reviews for the minister together with its recommendations.
7. The Minister makes his/her deliberations.
8. The Vice-Chancellor has the opportunity for an oral briefing on her/his institution after the Minister's announcements have been made.
9. The Report on Quality Review is presented to Parliament (CQAHE 1994c).

Requirements on the Universities

Overtly one could say the requirements are minimal. The university is to be a member of the UNS, to prepare a Quality Portfolio to make the Vice Chancellor available for an oral briefing and to continue to act in a manner outlined by the Committee and to maintain or improve on a previous year's performance.

Response by the Universities

There seems to be unanimous support for the Quality Audit although there has been some speculation as to why there is such support as the grants are rather minimal (Henderson, 1994).

This background hints at how a University culture maybe required to yield to forces demanding structural change.

UNIVERSITY CULTURE

Quality Assurance is being presented as something new. In fact the focus on quality is nothing new. What is new is the imposition of the 'processes of quality' and the way in which quality is being defined. The change in the definition of teaching effectiveness in terms of a market economy rather than education requires a corresponding change in University culture.

The new language of TQM prepares us for our changed task. We are required to work towards 'outcome measures', 'products', and clients'. We now prepare students for that market economy in a global society.

At the grass roots the reaction has been concerned disinterest. Henderson states:

For a great many academics, "commercial" equates with "distasteful"...The fact that the practice and philosophy of total quality management arose in an industrial context has not escaped them... (Henderson, 1994 pp 7-8).

Most academics are not so shallow as to be confused by jargon. Most can see that change in language usually accompanies change in practice.

There has been a move away from university management, to state management, and now to national management, with International management looming high on the horizon. (For example the Organisation for Economic Development (OECD) is currently establishing a set of Performance Indicators for higher education [Hattie, et al 1991]).

What then are the major changes expected in our teaching and learning? When determining the worth of a teacher we are now encouraged to examine: how many students passed the unit; how many papers have been published, how many conferences they have been to; how many papers have been presented; and so on. There seems to be a disconcerting focus on quantity (Wilshire, B 1990). This probably occurs at the expense of quality or personal health. Increasingly there seems to be 'job sharing' in an attempt to continue to meet the requirements. The number of joint presentations and joint papers is increasing. The length of the papers is decreasing. Gone are the days when one spent the best part of one's life perfecting 'the paper'; a tome which was the definite paper on the subject.

EFFECTS OF THE QUALITY AUDITS ON TEACHING AND LEARNING

Sociological Questions

Is there an attempt to conduct a system/culture change through the use of quality audits?

After examining various sources it would appear that there is generally a shift in several areas. University culture is increasingly coming under national and international influence. The definition of teaching and effectiveness is being taken out of the academic arena and moved into the political policy arena. Funding is increasingly attached to compliance. Processes are being changed and controlled externally. The language, for the linguists amongst us, and therefore the meaning of education is being changed. Academics are starting to lose autonomy of thinking. Quality is being determined externally. Teaching becomes a job, students become clients and employment becomes the desired outcome.

Management Questions

How does the quality audit affect the management of a university?

How does the quality audit link the university with National and International policies?

There are a number of management documents which may help to inform our definition of effective teaching. These documents would help to determine whether our mission, vision, goals and objectives as an individual teacher are congruent with those of our department, university and country. If our personal definition of effective teaching is to be reflected in some way in Australian higher education it is important that we become involved in the management process that formulates the definition. One must ask how many of us relish the opportunity to have input into the Annual Report or the Programme Review or even the Quality Portfolio in our Faculties and universities? Indeed how many of us seek opportunities to be involved in: student evaluation of teaching; peer review; annual appraisal; comments on publications and research; informal feedback; and promotions committees? Each of these practices are components of quality control processes which allow indirectly for input into the definition of effective teaching.

Promotions committees implement university guidelines which generally outline quite clearly what the University values in education at the various levels of appointment. This management tool is closely linked to the universities definition of effective teaching at various levels of appointment.

Recently there has been increasing support at a national level for the formal use of student evaluations (Marsh and Roche 1994, Piper W 1993, and Eley and Thompson 1992). The Quality Audits reflect this focus (CQAHE, 1994b). Although there are some concerns regarding the quality of the student evaluations there seems to be widespread acceptance of their use in higher education. This is probably due to the fact that student feedback on teaching quality and course quality have enormous potential for improving the quality of teaching if they are done correctly.

To some extent teaching pedagogue may also be found in the various management documents. When being led by pedagogical directives in management documents, one needs to be aware of possible conflict between values within the same document. One need not look too far to find conflicts in value statements (CQAHE, 1994b).

It can be seen that the various management practices at faculty, university, national, and international level, impinge on our definition of effective teaching. They also assist us to inform our personal philosophies on education and review our teaching practice.

Funding

To what extent is funding linked to outcomes of quality audits?

Is funding to the University greatly affected by results of quality audits?

Funding is being used as the incentive to implement change. Only members of the National Unified System (NUS) of universities are eligible to be Audited. Only half of these may gain a share of the funds. In determining grants the Committee will consult other government instrumentalities before recommendations are made to the minister.

Funding for the Quality Assurance Programme (of which the Quality Audit is one arm) is appropriated under s18A of the Act (*Higher Education Funding Act 1988*). The Minister can discern if funds are to be distributed. He or she needs to be 'satisfied that assistance will be used to maintain or enhance the quality of higher education' (CQAHE, 1994c).

In monetary terms 'the maximum grant the Committee can recommend for an institution is equivalent to five per cent of an institution's operating grant'. The money is dependent upon the result in the Quality Audit and previous expenditure of quality funds.

At University level utilisation of funds occurs through a variety of means depending on the University.

Industry

To what extent does the quality audit affect the promotions procedures?

How does the quality audit affect staffing?

These questions are indirectly related to the quality of teaching and learning. Presumably the better teachers get the promotions and get appointed. As we all know, this is not always the case. There may be a large number of extraneous variables that come into play with both promotions and appointments. As both promotions and appointments are so easy to manipulate it would be reasonable to suggest that both would be easily influenced by the pressure of University bureaucracy to comply with Quality Audit requirements. Similarly it would presumably be equally easy not to comply.

TEACHING

How does the quality affect teaching and learning?

How should the quality audit affect teaching and learning?

By way of conclusion I would like to summarise the ways in which the Quality Audit may be seen to affect teaching and learning. After examining the background issues it can be seen that there is an increasingly national and international move to implement the principles of TQM in higher education. Although the notion of 'Achieving Quality' in higher education is being presented as something new, experienced teachers know that monitoring effectiveness preceded the principles of TQM by many decades. Close examination of the theoretical and political perspectives of TQM shows that what is occurring is much more than a monitoring of quality. The structure and modus operandi of the committee set in place the requirements for a culture change on a national and international scale. The principles of TQM appear to be resulting in a shift from autonomous free thinking professional academics in which self regulation and discourse lead to improvement in practice, to one in which academics function in a market economy in a global society in which the primary aim of education is jobs or more realistically the maintenance of the system in which a market economy can comfortably exist.

Teaching is affected in many ways as a result of the management changes required. Congruence between personal mission, vision, goals and objectives as an individual teacher will need to mirror those of department, university and country if we are to gain opportunities in promotions and appointment. This congruence will be monitored in various ways through student evaluations and those of colleagues. Congruence will be so important as to determine which pedagogy and which practice is acceptable. Teachers will no longer be in control of the definition of teaching and education, let alone the monitoring of effectiveness which flows from the definition.

There will be uniformity in diversity and universities will become more marketable overseas. These changes will be encouraged through policy, funding, and changes to lines of accountability.

I would like to leave you with two questions. "Who is determining what constitutes teaching effectiveness? Why?"

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STUDENT OPINION QUESTIONNAIRE CASE STUDY

ABSTRACT

The author is employed in the Curtin Business School as an academic and international student coordinator in the "International Student Services". In this role he is responsible for both induction, orientation, academic counselling and the teaching of international students. In addition, he is also involved in advising and training staff in the "multi-cultural classroom". To better understand the perceptions of international post graduate students to lecturers administrative and teaching performances, a study was conducted using a "Student Opinion Questionnaire" (SOQ). The study revealed that a number of areas were considered as very favourable and others that were in need of attention. Results obtained will be used to provide staff awareness and development strategies within the Business School.

BACKGROUND TO THE CASE STUDY

International student numbers in tertiary institutions have increased dramatically over the last decade (DEET, 1994). The numbers have gone from 12,033 in 1982 to 69,876 in 1992 (DEET, 1994). Figures for 1994 suggest that the figures are now in excess of 75,000. Lecturers find that it is common to have between 25% to 50% of their classes comprising of international students. This situation has presented increased teaching challenges to lecturers (Ballard & Clanchy, 1984). Despite poor economic indicators over the last decade (Industry Commission, 1994), the "export of education" in the services area has achieved spectacular growth (Cummo, 1994) and additional income generated by this program has been estimated at \$1.4 billion per annum for the Australian educational sectors and the economy..

In addition, in recent times, tertiary institutions have also been competing for extra Federal Government funding and new instruments have been introduced to measure "Quality Teaching", (Maslen, 1994). University staff are also being assessed for promotion by instruments such as the "Student Assessment of Teaching" (SAT) and the "Student Opinion Questionnaires" (SOQ).

To address the "Quality Teaching" issue as well as the importance of being internationally competitive, it was decided to carry out an action research project to evaluate teaching staff administrative and teaching responsibilities using, as an instrument, the SOQ. This form consisted of 8 sections and comprised 46 questions. The SOQ was slightly modified and used with 16 first year, first semester international Post Graduate students enrolled in Business Courses in the Curtin Business School at Curtin University of Technology. The students comprised of 1 Mauritian, 2 Indians, 1 Zimbabwean, 1 Vietnamese, 3 Thais, 2 Singaporeans, 1 Japanese, 1 Malaysian and 4 Indonesians.

Each student was required to complete the SOQ for two subjects each week for a complete semester. The lecturer read and recorded the results weekly.

INTRODUCTION

Curtin University currently has in excess of 2,000 international students on its Bentley campus and has the largest numbers of these students amongst the four other tertiary institutions in the state. The Curtin Business School enrolls in excess of 50 percent of the international students at Curtin University.

Previous Research

Much of the literature in the area of international students in Australia has focused on social adaption (Burke, 1986; Rao, 1976; Hodgkin, 1966) and the effects of "culture shock" (Bochner, 1981; Furnham & Bochner, 1982; Hodgkin, 1978 and Barker, 1990). Some literature is available on how academic difficulties affects cultural adjustment and academic success (Ballard & Clanchy, 1988, 1991).

This study, therefore, will focus on student feedback during a complete semester and more precisely identify how teaching and administration was perceived by new international postgraduate students.

Student Opinion Questionnaire (SOQ)

Using the Curtin University SOQ instrument, eight sections were used:

1. General Design and Organisation, 2. Subject Material, 3. Resources Available, 4. Lectures, 5. Tutorials, Seminars or Discussion Sessions, 6. Out-of-Class Assignments, 7. Assignment System, 8. Communication Style.

Ethics

Students in the survey were asked to identify the staff who taught the various subjects that they would be reporting on. Staff were advised of the study and asked if they had any objections. No staff member objected.

A number of interesting situations occurred over the study. In an early report by one student, the author became aware of a problem which revealed that the student had considerable difficulty in one particular subject. The delivery method and content were causing some distress and already the student was predicting failure.

The student was provided academic support by employing another tutor and the problem was eventually resolved and she subsequently passed the unit.

In another case, a tutor was identified as communicating at a very advanced and technical level and a large proportion of the international students were unable to cope with the content. This situation was only partially resolved and remains with the Unit Controller for further action.

Results

From past experience and comments from students in various subjects, many of the results were not surprising. Indeed, many had already been identified and measures were being implemented to resolve them. What was most beneficial was that good quality data was now available.

Many of the results were encouraging. Staff appear to have adjusted to many of the difficulties causing academic concern to international students. Some staff have consistently operated at the highest levels of competency and are held in high esteem by their students.

Other staff appear to be professional and may not be fully aware of the difficulties international students have in coping with a new learning environment. It is this area which now poses a challenge for "professional development" strategies within the Curtin Business School. Indeed, many of the

results obtained could well apply to any other teaching division in Curtin University or any other tertiary institution in Australia.

Some international students from third world countries consistently rated all dimensions as very high. This was a noticeable trend. When investigated, it was found that the students compared the factors with those back home. In another case, students were more demanding of the system in Australia because they were paying considerable sums for their tuition fees and expected more for their money.

Because of this study, it was also found that the students were becoming more discerning and perhaps more demanding as to many facets of the lecturers and seminars, particularly as the semester progressed. The author also became more aware of his own performance, assessment style, administrative processes etc.

Overall Results of the Case Study

Results were collated and recorded weekly on a spreadsheet. They were classified using the descriptors of "Strongly Agree" (SA), "Agree" (A), "Disagree" (D) and "Strongly Disagree" (SD). Percentages of the final statistics were then calculated. The results were then combined for SA and A and then for D and SD. If the scores exceeded 90%, it was then considered to be a favorable result.

From the results collected over a 12 week period, it was found that many staff have adapted to administering and teaching international students. However a small number were perceived to be not as skilled. In overall results, 34 % of the questions were responded to as "Strongly Agree", 53 % as "Agree", 10 % as "Disagree" and 3 % as "Strongly Disagree". The individual items will now be presented:

QUESTIONS THAT APPEAR SATISFACTORY

The unit is well organised.

I have been provided with a useful outline of the aims, topics and assessment in the unit.

The various class sessions have linked effectively with each other.

Within lectures the material has been presented in an orderly sequence.

The lecturer has been responsive to students' questions or problems.

I have found the lectures valuable.

The tutor has been well prepared for these sessions.

The tutor has a sound knowledge of the subject.

The required preparation has been clearly specified in advance.

The requirements for each assignment have been clear.

I have managed to cope with the amount of work required by assignments.

The comments and feedback from the marker has been helpful.

The marking of assignments has been prompt.

The marking has been fair and consistent.

I feel that I have learned by doing the assignments.

The allocation of marks to the assessment tasks is balanced.

The current assessment system is suited to this unit.

The assessment system appears to have been well thought out.

The assessment system enables me to demonstrate what I have learned.

I have been clear about each of the assessment tasks in this course.

Comments on assignments are useful for future tasks.

Feedback and comments between lecturer and students is friendly and helpful.

QUESTIONS THAT NEED ATTENTION

The unit has made realistic assumptions about my prior knowledge of the subject
The types of class sessions (eg. lectures, tutes) have been suitable.
The demands made on my time have been consistent with the credit point value of the unit.
I have been able to understand the content of this unit.
Most of the subject material has been new to me.
The subject material has been treated in suitable depth.
The content has been well illustrated by helpful examples.
I see application of this material in my intended area of employment.
I have found the subject interesting.
Course content also contains international references to the topics presented.
The prescribed text(s) have assisted my learning.
Additional reference materials have been available when needed.
The handouts provided have been helpful to me.
There has been an adequate amount of handout material provided.
Staff teaching this unit have been available to students out of class.
The lecturer has presented material clearly.
The lecturer has made use of relevant illustrations and examples.
I have managed to cope with the quantity of material presented in lectures.
The intended purpose of these sessions has been clearly specified.
There have been adequate opportunities for me to participate in discussion.
I have increased my understanding of the subject through these sessions.
The time required by assessment tasks is reasonable.
The lecturer is able to communicate in a clear and concise manner.
The lecturer does not use jargon or slang.

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THE USE OF DRAMA IN TEACHING AND LEARNING

ABSTRACT

Recent Government initiatives demand that quality teaching remains a priority within the tertiary educational system. Each discipline, with its unique characteristics and body of knowledge, faces its own challenge in trying to achieve this goal. Concepts that are central to nursing, by their very nature and complexity, require different strategies of teaching. One strategy employed by Curtin University, School of Nursing was the use of an artist-in-residence. It was envisioned that the introduction of theatre expertise would stimulate the creative abilities of academic staff. More importantly, it would enhance the quality of teaching.

The pedagogical issues that underpin this educational strategy are that:

- *the use of drama facilitates action in teaching;*
- *drama encourages intrinsic experiential learning;*
- *drama facilitates learning in the cognitive, psychomotor and affective domains;*
- *drama encourages students to observe the situation and analyse and discuss the interpersonal dynamics; and*
- *the live presentation delivers the message in an innovative and interactive way.*

Collaborative projects with the theatre professional included teaching death and dying in general and maternity settings and addressing the stereotypical image of nursing in a professional foundation unit. This production presents the use of drama in teaching and learning and reflective evaluation of this teaching strategy.

BACKGROUND

The use of drama as a strategy for teaching and learning in nursing is relatively new. The idea for implementing this approach in the School of Nursing at Curtin University of Technology came from the Head of School who had experienced the artist-in-residence program at the Colorado University School of Nursing, USA. In this program, Marilyn Krysl spent a semester observing nurses caring for patients. She recorded her experiences in a memorable collection of poems published by the National League of Nurses in *Midwives and Other Poems on Caring*.

The idea of implementing a similar program in Perth was initially impeded due to a lack of funds, however a grant from the University was eventually obtained and an actor/director was employed. It was envisaged that the actor would work with staff members to enhance creativity in teaching.

THE USE OF DRAMA IN TEACHING AND LEARNING

The French theatre great *Jean Louis Barrault* posed the question. "Is theatre a valuable phenomenon, individually as well as ethically?" (Cited in Hodgson, 1978). He came to the conclusion that drama can help in preparing for life, plays are ways of meeting aspects of life, theatre ought to entertain through educating and theatre is an escape to understanding and awareness. He also defined drama as "the art of the now a co-existence of sensations". Although videos can be obtained or commissioned on practically any topic, use of live presentation in lecture, conference or workshop is far more immediate and effective. Based on this premise two major projects developed. The first one was a strategy for teaching death and dying in both the general and midwifery programs and the second one was the portrayal of nursing stereotypes for the Professional Foundations of Nursing Unit.

TEACHING DEATH AND DYING

There is an abundance of literature that provides guidance on how to teach student nurses procedural skills. However, there is very little written about teaching death and dying. Experience gained from teaching this subject and anecdotes from the field suggest that "**the traditional methods**" of teaching were limited in that they failed to illustrate the substantive issues that needed to be addressed and to capture the true meaning of the message (the feelings involved) and more importantly did not help students to internalise this information and relate it to the context in which it applied. After experimenting with a few different teaching methods, drama was used.

The drama script was developed from excerpts of an interview with a patient who had a life threatening illness. The script centred around her thoughts, feelings and responses when she was hospitalised and diagnosed as having cancer. She discussed aspects of care that really stood out as being exemplary and incidences where the care left her feeling frightened and angry. It seemed a worthwhile exercise for students to view the experience of death and dying through the eyes of the patient. Using the script and liaising with academic staff, the actor produced a live presentation using students from the University's theatre-arts section. This presentation was used instead of a lecture to teach students about death and dying.

To assist the students to think about the major issues, an advanced organiser highlighting each major point was used. The students were given the advanced organiser before the drama session and asked to reflect and make brief notes on the various issues which were then enacted before them.

At the end of the drama the points on the advanced organiser were used to summarise the session and to integrate feelings, thoughts and the nursing actions. In addition some important sections of the script were illustrated on overheads and formed the basis for further discussions. For example, this particular part of the script was used to further explore nursing actions that promote healing.

Client

You've got warm hands -healing hands. (She holds nurse's eyes with her own) Do you believe in healing ?

Nurse

Yes, I do. But what's more important is, do you?

Client

(Still holding Nurse's eyes. After a moment) Yes, I do.

As part of the learning it was necessary to get students to think about their approach to care and how they would advise relatives that their loved ones had died. It was also important for them to understand how their own emotions and thoughts influence their actions. Role play was used to illustrate this point. The setting was in a ward area where the doctor had just certified a patient's death and the novice nurse had to inform a relative that her husband had died. This same situation was then re enacted by an experienced nurse who used a different and more expert approach.

The novice nurse was fearful, anxious and unsure of how to respond appropriately to the situation. The expert nurse having dealt with this situation before was able to respond professionally.

At this stage the students were asked to review the two different approaches and discuss important issues.

The educational intent of the role play was to illustrate to students that their education would not always prepare them to manage every situation they encountered and that it was natural to have feelings that were negative and could initially impair their performance. However, they had to try and learn from every experience; and turn negative experiences into positive learning outcomes.

EVALUATION OF THE SESSION

A formal evaluation of the session was conducted a week later using a questionnaire with open ended questions. Some of the students comments are listed below:

"Very necessary for nursing practice -most of us have not experienced death and dying"
"I found all issues of death and dying were covered effectively and this was an effective teaching tool"
"I felt the session was very well presented and an excellent idea and I felt I benefited greatly from it"

Overall the evaluation indicated that:

- the method of presentation was informative and dynamic, and it promoted understanding of the complex issues associated with death and dying
- the students were able to empathise with the client and the novice nurse
- observing the different nurses interact with the client helped the students evaluate their own practice and to shape their ways of caring
- the teaching strategies used in this session should be applied to other such subjects to facilitate deeper learning.

On reflection this was an all embracing teaching strategy which promoted experiential learning within the psychomotor, cognitive and affective domains (it was o.k. to cry). Furthermore, it created an educational milieu which encouraged the exploration of the students' perceptions, feelings, beliefs and values. The students commented that they would always remember the learning experience and relate the information to their practice.

PORTRAYAL OF NURSING STEREOTYPES.

Another project undertaken was the portrayal of nursing stereotypes for the Professional Foundations of Nursing Unit. This came very early in the student's education and was intended to stimulate examination of the steps nursing has taken to reach its current status, possible reasons for stereotyping (and media perpetuation of these stereotypes) and appraisal of personal aims and motives by

each student in the course. Laughter is a powerful conveyor of message so comic extremes were used to highlight the style of the ministering angel, the battle-axe, the gay male, the handmaiden and the whore. Much laughter was elicited by the team of Theatre Arts students at the lecture performance and much lively discussion was reported back from the follow-up tutorials.

CARE OF THE FAMILIES EXPERIENCING BEREAVEMENT IN CHILD BIRTH

This teaching strategy was also used for the a group of postgraduate midwifery students. A series of role-plays interspersed with mime was used to portray key aspects of bereavement in childbirth. Students were given an outline of how the session would be structured and a copy of session objectives. Students were asked to write their feelings as they observed the drama. They were asked to discuss issues as they were enacted. The feedback was once again positive and was as follows:

- *the live acting made it a very real experience*
- *made us feel we could talk about our feelings or write our feelings down but not have to discuss them with everybody*
- *it helped me reflect and think how I could approach these situations in the real world*
- *very, very helpful to prepare us for the future*
- *my sister has had three stillbirths, made me realise what she had endured.*

In summary, drama provided students with real experiences which provoked feelings that they were allowed to express within a protective environment.

CONCLUSION

Employing the actor and the use of drama stimulated thinking about alternative methods of teaching and learning. Out of this experience a Creative Teaching Special Interest Group was developed for nursing academic staff. It is envisaged that this group will develop into a university wide network.

Student feedback was overwhelmingly positive, both immediate and long term. One of the outcomes has been the lasting effects it has had on the students, particularly at the affective level. Students, for example, indicated how the classroom experience helped them in a clinical situation some considerable time later. These instances are raised in debriefing sessions within clinical settings or students have discussed an experience with the teacher. It has also stimulated students to search for sources of information other than texts and discuss the issues raised with others in their lives.

'Increasing links' is a good way to summarise the benefits of drama in teaching and learning: linking students to the realities of practice, linking students to the ones experiencing care, linking students and staff to other sources of learning, and strengthening the links between learner and teacher.

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MAKING THE MOST OF THE MEDIA IN MULTIMEDIA

ABSTRACT

In many examples of interactive multimedia (IMM), it is evident that the multimedia computer environment is chosen as a delivery medium not because of its multimedia capacity but because of the computer control. In designing instructional sequences with IMM, it is important to make use of the media attributes as well as the computer control if the instruction is to achieve its full potential. This paper will discuss some good and bad examples of the use of IMM technology and will describe strategies by which the multimedia capabilities of CBL can be used to increase the effectiveness of learning materials.

INTRODUCTION

Interactive multimedia (IMM) is a delivery medium for education and training that appears to have taken the higher education sector by storm over the past 3 or 4 years. It has many appealing attributes and appears to have unlimited offerings for improving the quality of university teaching. For example, The Committee for the Advancement of University Teaching has put over 75% of its funding into multimedia development projects in the past three years. Many universities now support development units for the express purpose of creating multimedia programs for teaching and learning. It would seem that multimedia can do no wrong.

Like any other instructional delivery medium, multimedia can be used well and it can be used poorly. When we consider the advantages to be gained from this technology, it must be remembered that these can only really be gained from applications that use the technology in sound and proper ways. One of the principal attractions of multimedia to universities is its apparent capacity to replace conventional face-to-face teaching. With multimedia, students are free to learn at their own pace, in their own time and in many cases at a place of their choosing. This, however, is not the real advantage of the use of multimedia over conventional teaching. Multimedia has the ability to achieve significant learning gains and it is this aspect that should guide its usage and development.

The development of multimedia programs follows similar instructional design principles as any other media, but multimedia developments differ significantly from conventional developments in the facilities and features they provide the instructional designer. Much of the advantage of multimedia is to be derived from astute usage of the media elements in interactive and purposeful activities that engage the learner rather than in replicating conventional instruction in this new form. Our observations of much of the multimedia material that is currently being developed and used in instructional programs underutilises the best features of multimedia by failing to take advantage of the ability of this technology to provide and manage meaningful and engaging practice and activity.

LEARNING FROM MULTIMEDIA

Educational theory and commonsense suggests that people learn most when they are actively engaged rather than passive recipients of information. Students are active in the learning process when they are mentally and cognitively consumed with gaining meaning from the information with which they are interacting. Knowledge construction comes when students relate new knowledge to existing knowledge and use this to build links and connections between the two. This form of cognitive activity is called *generative learning* (Wittrock, 1974) and results in students' knowledge frameworks and structures being used for interpreting new information, reasoning from what is known, and for solving problems (Jonassen, Mayes & McAleese, 1991).

University education normally seeks to develop advanced knowledge and skills development. The instructional strategies that are most suited to this are those that foster deep levels of cognitive processing, reflective thinking and knowledge construction. Traditional instruction is often driven by instructivist principles that expose learners to prescribed and determined inputs. Preferable environments are those where the learner initiates dialogue with an environment that supports and engages the learner.

Multimedia learning environments can be readily designed and built to foster this form of student activity and learning. Typical applications involve microworlds or learning environments in which the students are able to experiment with and manipulate variables to construct their own meaning. Other forms include hypermedia where learners operate in an *information space* and interact with various knowledge forms to derive their own meaning and understanding through guided activities. Multimedia microworlds are able to offer a range of simulated activities and environments removed in only small ways from real world applications.

The forms of multimedia described above are infrequently observed in the products and developments from educational institutions. They represent a far move from traditional instructional designs with which most lecturers and teachers are familiar. A large number of applications are merely electronic reproductions of conventional instructional materials and take little advantage of the new environment apart from the computer delivery. This had led some writers to redefine multimedia as being a form of computer-based learning material distinguishable from other forms by the amount and level of computer control and interactivity (e.g., Allen & Hoffman, 1993). Multimedia is seen as one end of a continuum describing computer-based instructional materials with sequential links between instructional and media elements. At the other extreme is hypermedia where links exists between all instructional and media elements to facilitate wide and unstructured forms of user access and interaction (Figure 1).

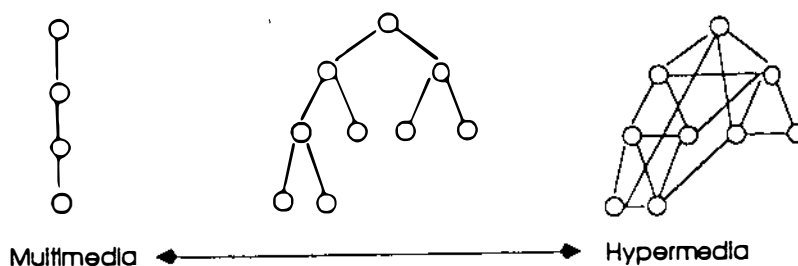


Figure 1

Figure 1: A continuum describing the architecture of computer-based learning materials.

If teachers and developers are to maximise the effectiveness of multimedia programs, it is essential to utilise the media attributes that characterise the technology and contribute to its strength as an instructional tool. This necessarily entails moving along the continuum and structuring presentations and activities to create instructional environments where the user plays an active and engaging role in the learning process.

MEDIA ATTRIBUTES

What are the strengths of the medium? What is the unique combination of attributes that make up multimedia, and how can we exploit those characteristics to improve student learning? From an instructional design perspective there are a number of discrete attributes that can be combined in many ways to form the instructional episode. Multimedia is best when it utilises its strengths and unique attributes. These include:

Use of colour

Colour can be used effectively in multimedia programs, not just for visual appeal, but also as an integral part of the design. It can be used to signal various elements of the interface to assist students' intuitive 'feel' and discrimination whilst working in the program. Colour can be used to:

- Communicate the overall structure of the program
- Link logically-related elements
- Differentiate between required and optional data
- Highlight student responses
- Separate various screen areas such as visuals, text, instructions, prompts and commands
- Emphasise key points (Milheim & Lavix, 1992).

Animation

Animation is a powerful attribute which, within the context of instructional programs, usually has little or nothing to do with cartoons, except for occasional 'user friendly' cartoon characters which guide the learner through the instructional sequences. Animation is frequently used - particularly in opening sequences - simply for its visual appeal, but it is best used to graphically illustrate cause and effect and temporal relationships (e.g., Rieber, 1991; Mayer & Anderson, 1992).

Ability to incorporate a variety of media

With some limitations, multimedia has the ability to present a variety of media on the one platform, thereby drawing upon the unique attributes and strengths of text, video, and sound. The limitations are that the text is more difficult to read on a screen than in a convenient book, the quality of Quicktime video is very poor compared to a VHS tape, and the sound is acceptable. But the *combination* of elements presents the teacher with the opportunity to use the features of the available media that are most appropriate to achieve the requirements of the task. Integrated multimedia environments combine the symbolic and processing capabilities and enable learners to connect their knowledge to other domains (Kozma, 1991).

Learner control of navigation and direction

Unlike video, audio and text to some extent, which are essentially linear, multimedia allows the learner to control the way he or she will use and work through the program. Capitalising on this feature means that the student can plan, structure and sequence his or her own learning experience. Studies of learner control have identified a number of positive gains including increased motivation, increased self determination and increased achievement gains over more structured forms of the same

materials. Learner control is more suited to advanced than initial knowledge acquisition (e.g., Becker & Dwyer, 1994; Shin, Schallert & Savenye, 1994).

Provide engaging interaction

Multimedia can readily incorporate opportunities for the learner to interact in a meaningful way with the material. Activities and exercises give the learner an opportunity to demonstrate his or her understanding of the concepts presented. Well-designed multimedia learning environments enable learners to engage in the process of creating, elaborating or representing knowledge rather than simply viewing different representations of content as is commonly the case with conventional knowledge-based activities (Hannafin, 1992).

Immediate feedback

Multimedia learning environments have the capacity to provide feedback in a range of forms and under a variety of predetermined conditions. Feedback can be used to reinforce learning or as part of the information processing cycle. Continuous feedback can also be provided in activities where the effect of a student action or response can immediately be seen on the screen, for example, the effect that changing a single variable has on a graph. Feedback acts strongly as an information source and serves to provide interactions that result in mutual influence between learners and their environments. The use of feedback in instructional applications significantly influences the nature and form of learning that is achieved (Mory, 1992).

Provide realistic problem-based contexts and simulations

Multimedia is an ideal platform for presenting stimulating and challenging problems and realistic simulations. The student can be immersed into a real-life situation without any of the inherent real-life dangers and consequences. The provision of a realistic context, combined with authentic tasks and activities, can provide a learning environment that demands higher order thinking and problem solving to achieve a satisfactory outcome. The most effective learning is that which is most meaningful and therefore is transferable. This form of learning is case-based and involves meaningful real-world tasks. Multimedia is best used when the instruction provides contextually based environments that are meaningful to the learners (Brown, Collins & Duguid, 1989; Jonassen, Mayes & McAleese, 1993).

Multimedia programs that ignore the attributes and strengths of the medium is multimedia at its worst. But some attention to the design of the program to capitalise on the unique characteristics of multimedia will result in a program which encourages higher order thinking and learning, and is challenging and enjoyable to use.

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EMPOWERING STUDENTS TO IMPROVE THEIR WRITTEN LANGUAGE ACCURACY IN L2 (ITALIAN)

ABSTRACT

This presentation illustrates a technique I have developed to improve written accuracy in the second language by increasing the students' awareness of their own typical mistakes through a process of guided self-correction.

The technique, which I have experimentally implemented for a semester in two advanced classes of Italian at second and third year, is an attempt to address the problem that students normally seem to take little or no account of feedback given unless they are prompted to be actively involved in the process of correcting their own mistakes.

Through a system of assisted correction which I will describe in my presentation, students are encouraged to understand their own grammatical and lexical errors and to keep a map of their own recurrent typical mistakes. My findings are that students are actually able to easily correct the great majority of their own mistakes and that their accuracy improves through the process.

"THEY DID NOT EVEN BOTHER TO READ IT!"

Every teacher of languages, and not languages alone, must at some stage or another have experienced the terrible frustration of marking over and over the same mistakes, only to find them recurring not only across the class, but even in the same student: this in spite of our best efforts in giving the students detailed written and oral feedback.

How many, like me, have come to the conclusion that the students have not even bothered to read the corrections, explanations and comments on which so much time and care were spent? The principle that we learn only from trial and error and through our mistakes may be true, but somehow the desired effect of self-correction does not appear to occur spontaneously in language students. It is in response to this observation, and being determined to increase my students' written accuracy, that after many years of trials I have finally stumbled on a technique which seems to hold great promise and to allow the students to improve their performance by internalising their errors and empowering them to take responsibility for their own language development.

The critical element is exactly this, that no amount of advice will normally have the desired effect unless the student oneself is forced somehow to take a critical look at one's own performance, in order to become aware of the relative gravity of each individual deviation from the linguistic norm, to realise that in one's own recurring mistakes there is, indeed, an underlying pattern, and by learning to observe this closely, to put in motion the dynamics of self correction.

I am now going to describe the technique which I have successfully employed for two semesters in two advanced classes in the post TEE stream of Italian studies at Edith Cowan University. I am in the habit of setting a short written composition each week generally under the form of a reflective diary entry - which is marked and collected in a folio of homework as part of the final assessment.

When I mark the first weekly assignment, I make a note of the most common typical grammatical and lexical mistakes, and then I present to the class a random sample of these using an overhead projector. The first step is to get the students to collectively identify the incorrect linguistic traits and to suggest a better alternative. This done - we discuss the relative weight of different mistakes in order to map out a chart of errors and negotiate a system of marking. In my experience even third year university students may still be quite unaware of the marking criteria of their lecturers unless they are negotiated together, and what is even more serious is that they do not normally have a clue as to relative gravity of their own errors.

The following step is to warn students that next time they receive their assignments back, they will not find them fully corrected : each error will be signalled to them by way of agreed graphic devices, while the students will have to correct their own mistakes just as they collectively had done in the sampling demonstration. Of course they may use all necessary tools to find the right solution: dictionaries, grammars, and even group consultation and discussion. When an alternative is found, it is written down in pencil so the lecturer can easily check for correctness and, if necessary, suggest a better option. Later on, the students will do this at home and re-present their homework to the lecturer for confirmation or further discussion.

Some observations must be made at this point in time. The first is, that students generally, very easily, and sometimes in a matter of minutes, are able to find the correct solution in the great majority of cases, and that even when more time is needed for pondering, about 80% of mistakes are quite easily self corrected.

Second, the students with a generally higher degree of accuracy (fewer mistakes) are those who register a higher rate of successfully corrected mistakes. This obviously proves that the better students have also a better language awareness.

Finally, I have observed that over a period of time (we have 13 weeks in a semester) some of the most common, and repeated, typical mistakes decrease in frequency of occurrence, and it is this desired effect which is the key for a more permanent positive change in the process of language learning.

I also strongly encourage the students to keep a record of their own recurrent mistakes and to analyse them. A sample of just three assignments is generally sufficient for them to discover their own inner pattern and to become aware of their own weaknesses. Whether these are due to ignorance of a 'rule', to insufficient understanding, or to forgetfulness, the students become gradually quite skilled in looking critically at their own pattern of errors and start taking responsibility for acting on them.

It is this understanding and the internalisation of the mechanism of correction which acts against the inertia of the average student which otherwise results in the crystallisation of wrong linguistic habits. What actually precipitates the critical change, I believe, is the student's positive attitude in taking responsibility and the energy generated by being able to understand. Putting themselves somehow in the teacher's position also has a favourable emotional effect, while the barrier between learner and teacher is lowered considerably, not only by the student's effort to understand the logic behind the teacher's correction, but also by the teacher's effort to understand the logic behind the student's error. It is indeed a very satisfying process of mutual learning and discovery.

ERROR ANALYSIS**1994 (end of semester II) Post TEE class 2nd year**

Sample of 8 students (6 of Italian background, 2 anglophones)

Task: Essay of 2000 words

Typology of errors incurred

Ag	wrong agreement
G/N	wrong gender or wrong number
V	verb (includes tense, mood, form, auxiliary)
Vt	wrong tense or mood
Vf	wrong verb form, conjugation or construction, including verb 'piacere'
Va	wrong use of auxiliary
P	wrong or missing /unnecessary preposition , including articulated prepositions
Ar	wrong form of article (determ/indeter) or missing or redundant, including forms of adjectives quello/bello
L	wrong lexical choice, including false friends
S	wrong spelling, including doubles, vowels, accents and apostrophe
O	wrong word order
X	other, incl. adverbs, relatives, possessives etc.

CATEGORY	N. ERRORS	PERCENTAGE
S	93	26.4%
V*	66	18.8%
A(g)	63	17.9%
Ar	40	11.3%
P	29	8.2%
L	14	3.9%
O	8	2.2%
X	12	3.4%
	351	100%

*Verb errors are divided as follows:

Vf	30	8.6%
Vt	27	7.6%
Va	9	2.5%

Total number of mistakes occurred in the 8 essays: 351Average number of errors per student: 43.8Range: from a minimum of N.5 per student, to a maximum of N.71 per studentDensity of errors (total number of words in each essay calculated as 2000, divided by the average number of errors per student)

1 error every 46.5 words. On an average page of 250 words: 5.4 errors per page.

Error analysis on a sample of 8 written assignments including a variety of tasks: translations, summaries, critiques, essays, reports, diary entries

N. errors and number corrected X:X

Total Z:Z % corrected errors

Second year students : S

S	X:X								Z:Z	%
A	14:11	66:55	11:9	10:9	17:10	12:12	11:7	36:26	177:130	77.4%
B	25:17	6:5	6:5	14:10	21:15	17:9	28:24	28:23	139:108	77.6%
C	2:1	4:4	3:2	1:1	4:3	2:2	13:10	3:3	32:26	81.2%
D	9:8	46:31	10:5	6:6	9:9	6:5	7:7	19:15	112:86	76.7%
E	3:3	4:4	3:3	6:5	2:1	4:4	1:1	16:14	39:35	89.7%
F	19:9	43:24	8:6	10:9	10:6	8:6	6:4	3:2	98:66	67.3%
G	2:2	21:12	9:9	11:10	9:8	7:6	6:5	3:3	68:55	80.8%
H	7:7	2:2	3:3	4:4	3:2	2:2	3:3	1:0	25:23	92%
I	71:63	15:10	9:8	10:7	16:8	9:8	20:18	14:4	164:126	76.8%

Class 1 % of corrected mistakes: 79.9%

- * There was no set number of words for each task (excluding a major essay of 2000 word) and the length of input varied considerably among students, which explains the great variation in number of mistakes occurred among different tasks and across different students.

The 8 assignment samples used for this table were chosen at random out of 14 different weekly assignments and they are not in any chronological order.

Lesley Parker and Mario Zadnik
Teaching Learning Group, Curtin

Yvonne Burgess
Education, Curtin

Kate Finlayson
School of Mines, Curtin

Rob Guthrie
Business Law, Curtin

Rick Ladyszewski
Physiotherapy, Curtin

Deborah Pritchard
Agronomy, Curtin

IMPLEMENTING A DEVOLVED MODEL OF ACADEMIC STAFF DEVELOPMENT

ABSTRACT

The provision of appropriate forms of academic staff development is always a challenge for any tertiary institution. In a large, diverse institution, with a devolved management structure, such as Curtin University, the challenge is particularly great. This set of papers provides a variety of perspectives on the implementation of a model of academic staff development which appears to have considerable potential in such an institution. It describes a project in which six academic staff members (one in each of Curtin's four teaching Divisions and two Branches) were granted time-release to devise programs of academic staff development specifically to suit their own Division or Branch. These six staff, known as Academic Staff Development Associates, began by identifying staff development needs within their Division/Branch, then acting as facilitators, change agents and mentors, in attempting to meet those needs. As described in this set of papers, the project evolved rather differently in each Division or Branch. Overall, however, the experiences of the participants provide a sound basis from which to develop further this model for provision of staff development programs in an institution with a devolved structure.

BACKGROUND: THE CURTIN CONTEXT

Curtin University of Technology was established as a university in 1987, 20 years after its founding as the Western Australian Institute of Technology. Currently, Curtin has approximately 21,000 students and 300 staff. Structurally, it has four teaching divisions (Arts, Education and Social Sciences; Curtin Business School; Engineering and Science; Health Sciences), two Branches (the Muresk Institute of Agriculture; the Western Australian School of Mines (WASM) at Kalgoorlie) and three support divisions (Academic Affairs; Finance and Property; Research and Development). Each of the Divisions and Branches is further subdivided into Schools and Areas, which are regarded as the basic organisational units of the University. The institutional administrative structure is relatively flat, with considerable responsibility and authority devolved to Divisions/Branches and School/Areas.

Responsibility for academic staff development at Curtin rests with the Teaching Learning Group (TLG), situated within the Division of Academic Affairs and reporting directly to the Deputy Vice-Chancellor. During the past two years, activities typical of those initiated and carried out by the TLG's Academic Staff Development group (of 4-5 academic staff) include:

- the provision of an induction program for new staff;
- the provision of a 12-week program of "reflective practice" sessions for new and continuing staff;
- coordination of the academic staff promotion process;
- the conduct of research in areas critical to quality teaching and learning;
- the provision of workshops and advice on cross-cultural teaching;
- management and guidance regarding systems for student appraisal of teaching.

Other groups within the TLG provide support for distance education/open learning and instructional design/media and are heavily involved in alternative and innovative modes of delivery. Thus, as a whole, the TLG is extremely well-placed strategically to respond to special needs, interests and concerns with regard to off-campus and on-campus teaching and learning which arise across the University. This position was recognised recently through the major responsibility carried by the two senior staff of the TLG for the production of Curtin University's Strategic Plan for Teaching and Learning. The completion of this task added to the list of TLG endeavours which have helped to raise awareness of quality teaching issues on the part of staff and senior management across the teaching Divisions and Branches.

THE CONCEPT OF THE ACADEMIC STAFF DEVELOPMENT ASSOCIATES SCHEME

In further pursuit of the quality teaching agenda, the TLG, in late 1992, conceived a decentralised model of academic staff development whereby the work of the 4-5 academic staff development staff in the TLG would be complemented and extended by a teaching staff member from each of the four teaching Divisions and two Branches. It was envisaged that these six staff members, to be known as Academic Staff Development (ASD) Associates, would be released from their normal teaching duties in order to act as facilitators, change agents and mentors in academic staff development in their respective Division/Branch, with support from the TLG. A proposal for such a project was submitted to the Commonwealth Office of Staff Development and ultimately, was funded in the 1994 round of OSD grants.

In general terms, the main purpose of the initiative were:

- to continue to raise levels of interest in, and awareness of, quality teaching issues across the University, in ways appropriate to the culture, organisation and resources of the various disciplines and through persons possessing considerable credibility within their particular Division/Branch;
- to provide support for staff to develop alternative, innovative teaching strategies and practices, as appropriate to the diverse disciplines, organisational contexts and professional cultures represented at Curtin University;
- to improve links between the Divisions/Branches and the centrally-placed TLG, to enable the TLG to make appropriately-informed, more discipline-specific input, to bodies such as the University's Teaching and Learning Advisory Committee, on issues concerning teaching and learning, innovation and change, and staff development needs;
- to provide mid-career staff (namely, the six ASD Associates) with new skills and professional/personal development opportunities, particularly in the area of enhancement of teaching and learning;
- to foster inter-Division/Branch and inter-School collaboration in improving teaching and learning.

IMPLEMENTATION OF THE SCHEME

Following some initial contacts by the Head of the TLG with the Deputy Vice-Chancellor in each of the four Divisions and the Director of each of the two Branches, the scheme began in earnest in early 1994. Responses to the project varied across the Divisions/Branches. Some were very enthusiastic, and agreed to supplement the available funds with funds of their own, in order to ensure that their ASD Associates had ample time to undertake the various tasks. The means of selection of the ASD Associates also varied. Some Divisions/Branches called for applications amongst all staff and instituted a rigorous selection procedure. Others identified a staff member who had shown interest previously in this area. In two cases the formal identification of an ASD Associate took several months.

From the outset, regular (usually weekly), informal meetings between TLG staff and ASD Associates were an important part of the scheme. Where it was not possible for the Associates from the Branches at Muresk and Kalgoorlie to attend these meetings, video-conference links were set up, so that they could still be part of them. In the early stages, the TLG's role in the project involved the provision of support and training for the ASD Associates, including (i) information about national and local agendas in higher education and about innovations in university teaching and learning, (ii) access to key literature and, (iii) skills in needs diagnosis, facilitation, change and empowerment processes. As time went on, TLG staff worked with the ASD Associates in planning and/or conducting workshops, surveys and action research within their Division/Branch. The weekly meetings became a forum for the exchange of ideas and discussion of what did and did not work well and, in this sense, the ASD Associates were able to learn from one another's experiences.

The final stage of evaluating the relevance and usefulness of this decentralised, partnership model of academic staff development is now underway. Impressionistic evidence attests to the success of the model and the intention for 1995 is to continue the model, with two specific foci - one on the development of resources to support part-time, sessional academic staff (funded from a second OSD grant) and the other on the piloting of a new instrument for student evaluation of teaching (funded from Curtin University's allocation from the Quality committee).

ASSESSING CLINICAL COMPETENCIES

ABSTRACT

Professionals are people who problem solve for service in their particular discipline, through the use of technical or specialised knowledge and skills. If graduates from higher education are adequately prepared to perform their role as professionals, then the concept of competency comes to the forefront of the education charter. The literature reveals a variety of meanings concerning the concept of competency resulting in some academics adopting a narrow definition which focuses on psychomotor skills and vocational training. Competence, however, is a complex concept that encompasses such attributes as knowledge, skills and attitudes. It enables an individual/group, to perform a role or set of tasks, to an appropriate level, grade, quality or achievement, thus making the individual/group competent in that role. As competency is a complex concept, it follows that there should be multiple assessment strategies, to evaluate the effectiveness of student learning. Some of these include critical incidence, case studies, journal keeping, and self-evaluation.

INTRODUCTION

Generally, curricula are organised around different subjects in order for students to pass written tests. This subject centred curriculum whilst it is easily administered and controlled, may fall short of preparing students to practice at the beginning level of their chosen profession. This traditional system of education has been criticised by employers who complain that 'qualified' people, those who have completed a recognised program of learning in universities, only know what to do, they cannot actually do it (Fletcher, 1992). This challenges the responsible teacher who prepares students for professional practice, to develop appropriate assessment techniques, which judge whether an individual meets the criteria required to enter that profession. Competency-based assessment can meet this need, as it focuses on actual performance of what a person can do rather than what an individual knows.

DEFINING COMPETENCY

A narrow concept of competency can be conceived as the discrete behaviours associated with the completion of a single task. In effect the task becomes the competency (Gonczi 1993). This interpretation negates the underlying complexities involved in the performance of roles in the real world of professionals (Preston and Walker, 1993) and it ignores group processes and their effect on performance (Ashworth and Saxton, 1990; Field, 1991; Collins, 1991).

A second and more generic interpretation of competency, can be found in the management literature (Boyatzis, 1982). This interpretation concentrates on the crucial general attributes of effective role performance that a practitioner demonstrates and which may be transferable to other roles (Gonczi, 1993). This model not only ignores the context in which the competency takes place, but also the literature on novice to expert, which suggests that expertise is domain specific (Benner, 1984; McGaw, 1993).

A holistic perspective of competency marries both the above interpretations and considers the context in which the professional works. It allows for the incorporation of values, ethics and the need for reflective practice. This holistic interpretation of competency has been adopted by 19 professions, all of whom require specific standards of competency to be learnt at a university level of education.

THE LINK BETWEEN COMPETENCIES AND HIGHER EDUCATION

In fulfilling the goal of providing effective education, teachers in university have a responsibility to prepare practitioners according to the standards of that profession. Competency-based standards are basic statements of outcomes. They identify the major attributes which are required to ensure that a role can be fulfilled. These attributes reflect the knowledge, attitudes, values and skills associated with each aspect of performance in the workplace and are expressed in terms of professional practice.

A competency can be measured by using performance criteria that describe the processes, tasks and expectations of performance a competent professional will perform. That is the behaviour, the observable results and type of performance which would provide the evidence of competence. The nature of performance criteria for the professions can be complex and broad. They are not a check list of functions, but represent the complex attributes required to fulfil a professional role.

COMPETENCY-BASED ASSESSMENT

Assessment is about the collection of evidence. Within the traditional educational system evidence of required learning is often in the form of written assignments and/or a final examination. This evidence may be matched with the unit objectives and influenced by a 'norm referencing' process which compares results of the learners within a group with each other. Objectives are clear precise statements of what students should be able to do when they complete their instruction and passing the assessment attests to them having met those objectives. Collectively, unit objectives should reflect the competencies the student will need to demonstrate on completion of the learning program. Norm referencing, however, provides little help for the assessor who has the responsibility of deeming the student competent to enter the profession as a novice practitioner. Conversely, 'criterion referenced' assessment is based on the specific criteria on which a performance can be judged acceptable. By breaking down the elements of competency into performance criteria sufficient evidence can be collected to demonstrate that an individual can perform to the specified standard in a specific role.

COMPETENCY-BASED ASSESSMENT IN NURSING.

The most important aspect of an educational assessment is the ability of the test to measure what it is supposed to measure, that is its validity. It also needs to be reliable. The use of assessment techniques which are based on the representation of the real world enables one to increase the reliability and the validity (Hepworth, 1989). Clearly the use of direct observation would be ideal, however, nursing is based on the premise that each person is an individual and therefore no two patient situations are the same. The relationship between the nurse and the patient is constantly changing and is inextricably bound up in the differing perceptions of both parties. Additionally, reliability and validity is further compromised by the assessor's own perception of the nursing situation and their own nursing experiences.

Thus the nature of nursing is dynamic. It changes in response to a variety of social/political, economic, cultural, religious and health factors. Professional nurses address these complex influences and the uniqueness of caring for the individual, by using knowledge, intuitiveness and logical thought. Mindful of this constantly changing nature of nursing, nurses have developed competency-based standards which make explicit the complex attributes of a novice practitioner. Nurse educators have sought and implemented a variety of strategies to assess a student's clinical competence based on these competency standards. These strategies of assessment are integrated, combining knowledge, comprehension, problem solving, technical skills, attitudes and ethics. By using multiple assessment techniques, the amount of evidence increases providing a more solid foundation on which to make a judgement about a student's competence. Some strategies for assessing clinical competencies include: observation, written communication and self-evaluation.

STRATEGIES IN ASSESSING CLINICAL COMPETENCE

Observation

In many instances competence cannot be observed directly, it can only be inferred from assessment techniques which reflect competence. Whilst it is important to observe performance, it is dangerous to infer competency of a student from one setting, since professionals work in a variety of contexts. Observations are generally based on one sample of the student's performance, because it is impossible for the teacher to be present in all clinical situations. Since inference on the student's competence cannot be made from one situation, an adequate number of observations need to be recorded by a variety of assessors. Observing and judging a student's behaviour based on specific performance criteria derived from the profession's competency statements, can potentially make the assessment more valid and reliable, and also allows different assessors to assess students performance.

Critical incidents

One method of recording student performance in the clinical environment is the critical incident. This method not only records a learner's performance but can also be used to assess a student's problem solving and analytical abilities. In this strategy the clinical teacher records some aspect of the student's behaviour, to be evaluated according to specific performance criteria. Critical implies that the behaviour has a significant impact, either positive or negative, on the outcome of the activity. Before this technique for competency assessment is implemented, there must be agreement between clinical teachers as to the specific competencies to be assessed. The record of critical incidents can also provide a basis for student teacher discussion helping the student to visualise their own behaviours identifying both strengths and weaknesses. In nursing, questions posed concerning the critical incident usually relate to nursing judgements and/or actions such as those involved in the nursing process (Schweer and Gebbie 1976).

WRITTEN COMMUNICATION METHODS

Case studies

Professionals communicate amongst themselves to promote continuity of practice with written notes often forming the basis for such communication. Written communication such as case studies can be used not only as a teaching tool, but also to assess clinical competencies. In nursing this is a problem solving activity whereby a student undertakes a comprehensive physical and psychosocial assessment of a client and documents the findings using the nursing process. (Schweer, 1972). Teachers using this method of evaluation, not only assess a student's ability to communicate in a logical clear and concise manner, but also assess the student's ability to present a holistic perspective of client care. The teacher can also draw conclusions about the cognitive and affective domains and the ability to

establish a rapport with clients. Case studies are beneficial in providing an opportunity for students to identify what they would do in a particular situation, making explicit the underlying tacit knowledge they bring to problem solving and decision making (Schon, 1990).

As with other forms of evaluation strategies, evaluation criteria should be set before the case study is written. These should be based on the students educational level, practice experience and competencies to be achieved. Students should be informed of these details so that they clearly understand what is expected. For example, at the comprehension level the student should include interpretive and extrapolative behaviours whilst at the analytical and synthesis level the student would be expected to draw upon relevant theories (Reilly, 1980).

Journaling

A further method of evaluating clinical practice by written work, is journal writing. 'Journals are written dialogues between the self and the chosen audience' (Strackbein and Tillman, 1987). The value of journals lies in the ability to actively engage the student in transferring classroom discussions to clinical experience and allowing the evaluator to participate in the learner's experience from the learner's perspective. Using a triangular approach, whereby the student links personal and professional experiences with theory from the classroom and the literature, prevents students from writing what they think the teachers want to read. Teachers must, however, clarify from the outset the guidelines for journal entries. These include the purpose and criteria for evaluation, which should be based on the clinical competency being assessed. It is important to inform the students if journals are to be used for peer evaluation since students need to know how much they can self-disclose.

Criteria for marking, using the triangulation approach, is based on determining the level of analysis and synthesis in the entries which reflect the students reading, classroom and life experiences. Using this method of journal keeping will foster the development of skills in introspection, reflection, and dialogue and provides an avenue for students to make sense of and to learn from their mistakes. For this to occur, however, teachers need to build a trusting relationship with the student. This can be achieved by responding in a sensitive manner to personal disclosures and providing constructive written feedback on specific aspects of content rather, than global references to 'good work' (Heinrich, 1992).

Self-evaluation

A further method of assessing clinical competencies is by self-evaluation. Self-evaluation is useful in formative evaluation of clinical practice as students can identify their progress towards meeting specific goals. Techniques include journaling, videotape and self-rating scales. Self-evaluation requires skill and practice and for this reason the process needs to be taught in systematic manner at the beginning of the instructional period and implemented on a continuous basis. The literature describes the process of self-evaluation as the learner taking the responsibility to set goals and to determine achievement of those goals (Schweer, 1976; Best, Carswell and Abbott, 1990; Reilly and Oermann, 1992). In nursing, however, where there is an expectation of adherence to standards for safe practice, the process of self-evaluation can be learnt by working collaboratively with an experienced nurse educator, in setting appropriate learning goals based on the specific clinical competencies and performance criteria (Best, Carswell and Abbott, 1990). This collaborative approach allows the student to gain the confidence to self-evaluate and allows time for the student be socialised into the profession. It will only be successful, however, if the teacher is willing to act as a mentor and facilitator. Feelings of anxiety and negativity can be reduced by building a trusting relationship and creating a climate where the student feels free to take risks. The locus of control will eventually shift from teacher to learner as the learner gains more confidence in self-evaluation.

The focus of self-evaluation is to assist the student to confidently make independent judgements about her/his own practice in accordance with the values of the profession and it offers students the opportunity to express opinions about their performances. Thus, the goal of self-evaluation is to have students work towards an independent state where they will eventually be able to judge and act upon their own behaviours. This is based on studies which suggest that a person who participates in self-evaluation and creates their own learning objectives and solves their own problems, ultimately controls their own life (Best, Carswell and Abbott, 1990).

CONCLUSIONS

The traditional system of assessing students for professional practice has been criticised by potential employers as being ineffective. This challenges the university teacher to seek more appropriate techniques. Competency-based assessment may not be the panacea for this problem. However, it does measure the real world of clinical practice. Competency-based standards are basic statements of outcomes, they are the attributes required to fulfil the professional role at the beginning level. In nursing, they are complex and reflect the holistic nature of nursing practice.

There are a variety of competency-based assessment strategies which can be used to assess competency in clinical practice, these include observations such as critical incidents, written communication such as case studies and journaling and, finally, self evaluation. The degree of success, however, with these strategies depends on the teacher developing a trusting relationship with the learner and treating the learner as an adult, letting them take responsibility for their own learning. Vested interests and hidden agendas have to be dealt with if competency-based assessment is to function effectively. The change in assessment techniques means renouncing old habits, which is possible if university teachers are committed to preparing the graduate to the best of their ability. In the words of John Dewey 'We are free, not because of what we statically are, but as far as we are committed to becoming different from what we are' (Dewey, 1963 p291)

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MANAGING STUDENT PRESENTATION ANXIETY

ABSTRACT

Employers and professional groups rate oral communication skills very high. Graduates who are good communicators have a better chance of getting a job and are more likely to receive recognition and promotion within their profession. Students also need good oral communication skills in order to learn with and from one another, especially in a cooperative learning setting. Nevertheless, many instructors do not support or promote the development of oral communication skills as part of their subject teaching. The reasons for this neglect include the presence of quiet, shy or "reticent students" in a class, students who feel very anxious when asked to present, and the instructor's own dislike of giving presentations. This paper describes a range of procedures which the instructor can use to promote oral communication skills, including suggestions for setting and assessing oral assignments and helping students to overcome their fear of giving presentations.

A number of surveys have pointed to the high ranking given by employers to communication in rating employability: they form a major component of required competencies, are vital for interpersonal competence, and to develop collaborative and lifelong learning. Candy Crebitt & O'Leary (1994), Harvey (1993), Both these sources also rate oral communication higher than written communication as a prerequisite skill.

Students learn best when they are active. Talking and listening is an important activity but many classes are dominated by the tutor, and may not promote student learning. This general climate is made worse by being periodically punctuated by required student oral presentations without supporting exposure or training in presentation skills. Many students find this traumatic, and some may even drop out because of their distress.

Some of the reasons for students' reticence in class is that they see their novice role as not involving having anything to say. This would follow from their being in Perry's (1988) stage of dualism Position 1 which is represented as: "Authorities know, and if we work hard, read every word, and learn Right Answers, all will be well." This view goes with a concern for the "facts", thinking that the tutor has the role of transmitting facts, and that to know something is to be able to recite the facts, a view which may be shared by the tutor as Kember and Gow (1994) have shown so clearly. A further reason is shyness, poor social skills, the novel situation, the unknown audience, fear of assessment, the prevalence of forms of assessment placing a premium on 'reproductive learning' (Candy Crebert O'Leary 1994), and prevalent social anxiety. Then again there is the belief that asking questions in class demonstrates a failure of understanding Paul (1993, p. 486). Once again such views may or may not be shared by the instructor. In either case important consequences can follow. There are also physical factors such as the size of the group, seating arrangements, and the opportunity to contribute related to the physical setting, the general climate and the instructors style. A consequence of such factors is that students avoid communicating, do not become discipline literate, and that mild anxiety not dealt with may become more serious and result in presentation phobia. Further, the lecturer may obtain only a poor idea of student understanding, be unable to address the real needs of the group, and driven to take even more direct control to become the only communicator in the group. This in turn can lead to heightened tutor anxiety, subsequent avoidance

and dislike of tutorials, poor student evaluation results, and eventual debilitating phobia. Having now recognised that a problem exists, what measures can be taken to offset its influence. Possible remedies will be dealt with in three parts, the students and what they bring with them, the instructional activities, and the physical setting.

ENCOURAGING STUDENT TALK

The arrangement of the classroom is a key factor in encouraging effective interaction. Seating patterns which allow for eye contact between students, and not place the main focus on the instructor are best. Modular furniture is also useful since it allows moving from a single group to sub-groups to be easily done and as easily reversed. Less often commented on is the current popularity of echo chambers masquerading as teaching spaces. Acoustic tiles were once popular, but the spray on gunnite gun has given us hard reflective unforgiving surfaces. Failing directional microphones and zone of silence electronics not much can be done about rooms - fortunately students can help to make even poor acoustics tolerable.

You may think talking and reflection is important but until you convince students of its vital role not only for their current unit, for senior and postgraduate progress, and for work-place success where presentations are often pervasive. Once they know why certain activities are included, students will be active in finding ways to improve what you have devised, and telling you how to do it: you will be running quality learning circles before you even realise it. Remember control leads to much better performance, more enthusiasm and better health.

It is also important to model appropriate behaviour by establishing a routine from the first class session. This first session may be most important since patterns are so easily started in small ways. Also better is to start proper classes in the first week so that talking becomes the norm rather than silence. Use an icebreaker which requires everyone to contribute in a non-threatening way. Say how important it is to learn everyone's name, and use name tags to make this easier. Model name use. Provide information about yourself, and your interests and background. You may also wish to establish ground rules which emphasise what the expected behaviour for the tutorial should be, ideally with the group making suggestions as to what they would appreciate. It may also be useful to comment on the ethics of group behaviour. Suggestions that the group consider itself a confidential self-reliant unit, and that no gossip will be traded with outsiders as to what happens can help to make everyone feel secure and confident about each other, can also help mould the group climate.

Try to include some two person tasks at this first meeting. Perhaps a question asking what they hope to gain from the unit to think-write-pair-share, and then pyramid into a four person group which pools their ideas, draws conclusions, and reports outcomes to the class. After this activity it may be time to discuss the need to treat all contributions to a discussion with respect so that any group member is allowed to finish a statement before another comment or contribution is allowed. Discuss the need for a "wait time" of about 3 to 4 seconds between points to allow processing of information, to promote thoughtfulness, and mutual reflective activity. Discuss allowing even more time whenever particularly valuable contributions are made, since this will both provide for reinforcement and for its accompanying-post-reinforcement pause (supporting learning through non-interference, and more time for reflection of course). So the idea is to include regular oracy, but also thinking time, and writing tasks as well as opportunities for cooperative interpersonal activities. Such early regular activities force all students to have multiple, comfortable, and reasonably lengthy exposure to moderate to low challenge situations. This ensures that general anxiety levels are kept low, but also that the general positive climate will benefit learning throughout the group.

We have now dealt with the space requirements, the physical setting; the timing requirements, when to start activities, and how and when to sequence them; as well as the opportunity to interact easily in the circumstances provided. We need now to consider instructional processes.

INSTRUCTIONAL ACTIVITIES AND PROCESSES

Whatever may be said about the importance of different instructional methods, remember that it is assessment that drives the curriculum. If you do not assess higher level skills, including those supported by all the active learning techniques introduced, telling of facts will prevail, and group activities will be slimmed down to basic information. So let students have more control. Get them to generate short form quiz questions (Radloff 1993). Arrange for them also to devise and develop answers to essay questions, and debate between groups how best to answer such questions. The principle involved is that one wants to have students very familiar with a particular format before it is used in assessment. Only use essay examinations where there have been multiple opportunities to write essay type pieces, with feedback. And note that feedback does not mean marks, and does not mean that the instructor has to provide it. Having peers provide feedback leads to a doubling of the gain since giving feedback requires close attention to the issues, may require another look at the source material to check for ones own understanding, and it also can lead to discussion as to why this or that, and I didn't mean what you seem to think I meant etc. All of this is healthy learning fodder.

There are additional simple things that can be done. Have students use the assessment protocols provided to them early on, on their own assignments before handing them in. Use peer assessment of first drafts of assignments. These sorts of things will enable students to reflect upon the processes of learning which they are using. It will also introduce those few students who may be contemplating a career in academia to some of the issues which should concern them. They will need high level presentation skills, and a beginning understanding of how to organise and run a unit including activities, assignment topics etc.

Providing graduated exposure to increasingly demanding activities can be managed by classifying the range of instructional activities in terms of their difficulty. Angelo and Cross (1993) and many others have provided descriptions of a range of classroom research approaches. It is fairly easy to arrange these appropriately so that the easiest go at the beginning of the semester, and the hardest are left until later on.

APPLICABLE BEHAVIOUR MANAGEMENT STRATEGIES

Anxiety and panic have to be faced if one is an instructor. One needs to overcome them in lecturing and tutoring as Murphy (1992) has illustrated for us. They must also be faced by students - so whether one likes it or not, it is important to understand enough of clinical anxiety management as is necessary to provide a setting for students to conquer their fears. Clark (1989) is a useful single source for a range of good ideas about managing anxiety. Until Wolpe reintroduced in the 1950's desensitisation as a systematic practice to manage fear and phobia, no modern treatment had worked. Subsequent developments have shown that graduated exposure to feared situations, starting small, and moving up as tolerance increased, was highly effective. Perhaps existentialist angst also involves this choice to act despite the intolerable nature of the alternatives: but Sartre does not seem to have provided any situational item hierarchy. A useful look at modern clinical psychology, which will provide you with some unusual insights, is Seligman (1994).

For behaviour management however it is not recognised that one needs to appreciate that individuals operate according to the three modes, actions, feelings, and thoughts. Each of these needs to be

addressed in order to achieve lasting behavioural change. What works for clinical intervention, and for dysfunctional behaviour in that sphere, is surely not inapplicable where one wishes to achieve lasting change in the academic sphere of knowledge and understanding.

The emphasis upon feeling is probably vital - but this is seldom addressed directly in the tertiary instructional literature. Perhaps we can hint at how this can be managed by examining fear, and anger, and the assertive option. Imagine a continuum where anger leads to attack upon the threatening object, and fear leads to running away. Aggression and its consequences in narrowing the person is the outcome of the first response, and phobia follows from repeated avoidance. So what happens if one stands one's ground. Assertion happens. How to stand one's ground is the subject of the numerous assertiveness training courses that are available. But staying put is also desensitisation! And facing provocation without getting steamed up is anger management, but it is also an assertive stance. Face the aggro and problem solve, repeat statements of your own feelings, position, need to etc etc. Anything to delay action. And with sufficient delay one is no longer so angry, and next time will be even less disturbed. And staying put also reduced fear, so that next time one can also enjoy the success even more, and so on.

This is why it is important to start small. To do little things often at first. To examine one's feelings, and perhaps to rate the discomfort on the 100 point scale, and to do this often. Face one's feelings. Feel the feelings and still do what you need to do to achieve what you want to achieve.

All of this has one major goal. To enable participants to enjoy more and more the activities which are so rewarding and that lead to effective and life long learning. If one persists with this, and obtains feedback systematically, and keeps a journal, and involves others, including students in the process, then perhaps Bloom (1984) has his answer. He was searching for methods of group instruction as effective as one-to-one tutoring. We may find the answer in the mutuality of teaching learning to be found in each of our cooperative groups.

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ASSIGNMENT FEEDBACK: RELATING TO STUDENT EXPECTATIONS

ABSTRACT

Traditionally, it seems to be the lecturer alone, from an authoritative position of knowledge about the subject being taught, who decides what will be "good" and "relevant" feedback. But, is it realistic to assume that students will see it in the same light? Could it be that our feedback, no matter how well intentioned, may be viewed by some students as irrelevant, a statement of the obvious or even irritating?

I believe pertinent assignment feedback must not only consider the lecturer's views of an assignment, but must also take into consideration and acknowledge the separate views of the student who submitted the work. In an attempt to achieve this balance, I have been using a very simple pro forma, which the students complete and return with their assignment. In this session, I would like to share with you both my approach to assignment feedback using this pro forma and the views of senior students who trialed its use last year.

INTRODUCTION

To achieve a successful outcome to a set class assignment there are at least three tasks which I believe must be effectively completed by a lecturer;

- The first task is to make very clear to students the *requirements and expectations* of the assignment. Perhaps, like me, you have learned this from past errors - an uncomfortable, but effective learning experience!
- The second task relates to the *fair and honest marking* of the assignment, which a properly developed marking plan or system can effect. From experience, I have found the better I define my *requirements and expectations*, the easier it is to formulate an effective marking plan.
- The third task covers the *provision of good and relevant feedback* to students about their performance. It might seem logical that if the lecturer has competently covered the first two tasks, the third should naturally flow-on as a consequence. However, I have consistently found this process does not necessarily translate into good and relevant feedback from the student point of view.

Perhaps task one and two can be so simply learned by a lecturer from direct experience because of their inherently objective nature. However, the objectivity of the first two tasks may be responsible for an assumption that we should consider only the objective feedback their analysis identifies. By doing so we are possibly at odds with the student's own opinion of the value and quality of the submission. By giving feedback based only on the *lecturer's* opinion of where the student met/ did not meet the *lecturer's* stated objectives, is it any wonder that the student may adversely react to it? Ironically, it is most likely to be the poorer performing student who rejects such feedback - the student most in need of help and whose assignment we are likely to spend most time marking; such a waste if our comments are ignored.

For feedback to be effective, it must be accepted by the student. He/she must therefore be comfortable with the lecturer's comments and the manner in which they are presented. But, as lecturers, how are we to know what the most effective approach will be, especially as we are dealing with a variety of individuals, each with their own *subjective* concepts of right and wrong, good and bad? More information is needed than is provided by the student in the assignment alone.

Last year, I developed a simple pro forma, which was issued with other assignment information to all students, the intention being that it should provide me with the additional information necessary to recognise and respect student expectations in my feedback. I now would like to go on to explain the format of the pro forma, discuss some important points which I think need to be considered when introducing it to a class and provide details of a survey I carried out on final year students who trialed the pro forma in both semesters of last year.

ASSIGNMENT PRO FORMA

From my experience in discussions with students after returning assignments to them, two points seemed to be raised more than any other. The first related to the awarded mark and the second to areas of the assignment in which the students believed they had performed particularly well. Invariably, the point being made, with varying degrees of directness, was that the mark awarded was less than expected and the areas in which it was believed they had excelled had not been acknowledged (with further possibilities of marks being increased). From my point of view, I found these students tended to overlook aspects of the assignments which had not been covered well and this resulted in unreasonable expectations on their part.

To provide students with effective feedback, I realised I must also take into consideration their expectations. However, it would be a hard and wearisome task if these expectations continued to be unrealistic. It was necessary to find a simple and consistent way by which they could assess and advise me of their views. The outcome was a simple three point pro forma, which I entitled *Student Feedback Form*. I used this form in addition to, and not in place of, my usual *Assignment Feedback* form for advising students of the build-up of awarded marks and giving specific objective feedback comments (copies of the *Student Feedback Form* and the *Assignment Feedback* form are attached for your reference - they can be conveniently issued back-to-back).

The pro forma (*Student Feedback Form*) requires students to perform and record a self-assessment of their assignment in the areas which seemed to cause most contention. They are required to;

1. identify a mark range which is considered to be a *fair appraisal* of their efforts.
2. list three aspects of the assignment which are considered to have been covered particularly well.
3. list three aspects of the assignment which could have been improved upon. *To ensure the students get some direct benefit from this insight, they are also required to reflect upon the reasons why they did less well in the identified areas and consider how the circumstances might be avoided in future assignments.*

From the information included on the completed pro forma, I was able to provide additional specific tailored feedback relating to the expectations of each individual student in a way that I believe helped them build-up, or at least maintain, their self-confidence, while also fostering a good personal

relationship between us, ie;

1. If the student's anticipated mark was lower than the one I awarded, it gave me an opportunity to reinforce to them how well they had done. If their anticipated mark was higher, I could draw the student's attention to the areas that prevented them from achieving the mark, but in a positive way that showed them how the anticipated mark could have been achieved (quite often the disparity had resulted from the student having an unrealistic perception of their performance in the three areas identified as being covered well).
2. Often students did select three of the best aspects, which gave me the opportunity to commend their performance. If the identified areas had not been covered as well as they anticipated, I could give normal feedback advice. However, in both cases it also gave me the opportunity to emphasise and praise *other areas* which had been covered well.
3. This section requires a lot of courage for the student to fill out honestly, and it is important, therefore, not to be judgmental. By taking a non-judgmental attitude, I believe it showed the student I was genuinely interested in them and my perception of them was not dictated by the level of mark they achieved. I found the students were mostly harder on themselves than I would be, which again, gave me the opportunity to relate good positive feedback to them.

ASSIGNMENT PRO FORMA IN USE

It is important to brief the students well on the reasons for using the pro forma. I have learned that the concept can be extremely threatening to some students. It does take a lot of courage for a student to share with the lecturer his/ her true views of their assignment - particularly before it has been marked.

More than a thoughtful introduction of the pro forma is likely to be required to have it accepted by the students. I believe it is also essential that the students *feel* the lecturer has a genuine interest and commitment to them. Certainly, the students will assess the lecturer by the way the classes are run, but, when it comes to an assignment, more is needed to convince the students of the lecturer's sincerity. If the lecturer does not make clear his/ her *requirements and expectations* on issuing the assignment, the students may well feel "set-up" when feedback draws their attention to areas they did not appreciate they needed to cover. If the lecturer does not use a marking plan or system to provide *fair and honest marking*, it is unlikely students will be open in their comments for fear it may negatively impact on their awarded mark. In addition, if the lecturer is judgmental, the students are unlikely to be open about any negative aspects of their submission and the opportunity for reflection and improvement may be lost.

If providing other more general feedback (eg on *Assignment Feedback* form), it is important to temper any comments in light of views expressed in the pro forma. If the student openly admits he/ she has aimed to *scrape* a pass, there is no point in providing a great depth of feedback. I think it is better to accept *and acknowledge* their views and look to other ways of trying to encourage them.

Allocating some marks for the proper completion of the pro forma is also a good idea. I found the students were more careful in their considerations when marks were at stake - it also reinforced that I took the exercise seriously.

VIEWS OF FINAL YEAR STUDENTS

At the end of the 1994 academic year, a questionnaire seeking student opinion about the use of the pro forma was issued to final year students, who had trialed its use for one assignment in each of the

two semesters. The results indicated, that of all the students;

- 41.6% were comfortable with the requirements of the pro forma when first issued (25.0% unsure), but this increased to 70.8% by the end of the year (25.0% still unsure).
- 41.6% thought the pro forma a good idea when it was issued for the first time (33.4% unsure), but this increased to 75.0% by the end of the year (20.7% unsure)
- 54.2% were comfortable that the pro forma should be used for all course units (16.7% unsure). This is some way below the indicated level of acceptance of the pro forma in the class and may well reinforce that its success is dependent on anticipated lecturer attitude.
- their belief in why the pro forma was issued, included :
 - 81.8% **thinking** it was partly to benefit the students (9.1% unsure),
 - 9.0% **thinking** it was partly to allow the lecturer to catch lazy students (31.9% unsure),
 - 13.6% **thinking** it was partly to allow the lecturer to criticise students for not trying harder (22.7% unsure),
 - 86.9% **thinking** it was partly to allow the lecturer to provide feedback based on students' expectations (8.7% unsure).

The generally high results in the first and last point indicate the students, generally, are aware of, and accept, the real reasons for the use of the pro forma. However, I think the other two results (particularly those unsure) indicate how suspicious the students are of the concept - particularly as I am sure I have never in my feedback told any of them to "try harder" or been judgemental about reasons for scoring low marks.

54.2% thought their expectations were fully understood and recognised by the lecturer (41.6% unsure). There are various reasons which could explain why the unsure score is so high - my own inaptitude being amongst them. However, I believe it may be due to one of two causes, or a combination of the two; firstly, the students were not used to assessing their own performance in this way and it could be a reflection that they experienced difficulties in defining their true expectations, or, secondly, it could be an interesting reflection on the fact that many of the students were still hanging back from fully disclosing their true expectations.

CONCLUSION

The questionnaire results indicated that the students trialing the use of the pro forma strongly appreciated its value by the end of the year. However, I think the results also reinforced just how threateningly the process can be viewed by some students and this is likely to require a lot of hard work and patience to overcome. There is a strong need to fully explain the process, reinforce its significance and provide continuous encouragement and support.

In my own mind, I am confident that the results more than compensate the effort required by all involved. This year, I will be using the process for assignments in all my classes.

STUDENT FEEDBACK FORM

- 1 Identify the **mark range** which you believe represents a **fair appraisal** of your overall performance on this assignment, bearing in mind the assignment requirements:

|| 50 - 54% || 60 - 64% || 70 - 74% || 80 - 84% || 90 - 94%
|| 55 - 59% || 65 - 69% || 75 - 79% || 85 - 89% || 95% +

(space for lecturer's comments)

- 2 List **three aspects** of the assignment you consider have been covered **particularly well** :

- (i) _____
(ii) _____
(iii) _____

- 3 List **three aspects** of the assignment you consider could have been improved upon and reflect on reasons why they occurred and how they might be avoided in future assignments:

- (i) _____

(ii) _____

(iii) _____

STUDENT NAME: _____

DEPARTMENT OF CONSTRUCTION MANAGEMENT
BUILDING TECHNOLOGY 342
(QUALITY COMPONENT)

ASSIGNMENT FEEDBACK

Part A: Separate Report for Each Senior Management Person Interviewed /30
(scope, adequacy, insight, creative thought, consistency
of approach in all interview write-ups)

Part B: Summary Overview of all Interviews /20
(scope, adequacy, insight, creative thought)

Part C: List of Questions Used in Interviews /40
(scope, adequacy, creative thought, appropriateness, balance)

Presentation: /5
(grammar, fluency, clarity, spelling, format)

Registration of Group Members: /2
(on form, on time, complete information, correctly submitted)

Assignment Feedback Form: /3
(completed and relevant)

/100

CONVERGENCE AND DISTANCE EDUCATION: THE PROMISE AND PROBLEMS OF EMERGING COMMUNICATION TECHNOLOGIES

ABSTRACT

No one would deny that we are in the age of convergent communication technology. The scope, diversity and rate of change in this area make decisions as to the most appropriate delivery systems at best difficult and at worst risky. The thrust of this paper takes the form of a warning: that unless universities accept these difficulties and face the attendant risks, they could in the next decade face the prospect of a diminishing role in education or even extinction as a provider.

"We are only now beginning to understand the implications of convergence; an environment within which computing telecommunication, TV and radio come together to create a transparent interactive delivery system." (PTC, 1995)

INTRODUCTION

The Pacific Telecommunications Council Conference (PTC 1995) in January this year addressed the issue of convergent communication technology for distance learning from various perspectives, educational, technological and commercial. Indeed, it became apparent during the Conference that a number of universities and university consortia in the United States, Canada, the United Kingdom and Australia are already positioning to maximise the advantages of high-tech communication technologies. Quoted examples included: (i) NTU's commitment to globalise delivery via satellite over the next five years (trials have already been conducted in Canada and Malaysia and this month in Australia); (ii) the University of Saskatchewan where provincial delivery is being extended to other provinces and to the United States; (iii) Open Learning Agency, British Columbia, where similar plans are in train; (iv) OLA Australia's negotiations with South East Asian countries particularly Thailand; (v) Cal. Polytech, in co-operation with IBM to explore the use of an IBM ES/9000 and planned LAN File Server/Enterprise Systems Architecture (LFS/ESA) to support network delivery of multi-media education on demand; (vi) the same concept at Virginia Commonwealth University. Typically, the older well-established universities have been slower to respond, though it is hard to imagine that they will wait much longer. Globalising university delivery will happen within the next five years.

These and related trends serve to reinforce an emerging viewpoint that distance education can be defined more liberally than in the past. That is to say, distance education can be for "anyone, anywhere, any time". Distance learning can be effected within a few metres of a delivery site, or many thousands of kilometres away. Delivery will be convergent interactive and "asynchronous". It will include on demand video, text, graphics and sound. In quality it will match, perhaps exceed, that of face-to-face presentations. Where possible it will employ on-site as well as independent learning. A definition of our own Virtual Campus serves as an exemplar of future delivery (Ring and Watson, in press).

The implications of these measures are substantial. Standards and cross-crediting provisions are already agenda items in all universities and will require considerable discussion and discipline.

Increasingly, education will be viewed as a business, employing cost-effective solutions to reduce labour costs, better "customer" service and to maintain a competitive edge. Delivery technologies will assume a more prominent place in university budgets and universities will shift resources to enable technological convergence systems to be implemented effectively (hardware, software, new curricula, staff training and allocation of staff time). Instructional design specialists will be in keen demand. Delivery systems will include Internet (and WWW), satellite services, cable (including twisted pair, video and optical fibre) - each with substantial costs. Partnerships will emerge amongst universities and with commercial suppliers. In short, change in educational delivery is a certainty for the future.

EDUCATIONAL IMPLICATIONS

Recently, Oliver and Grant (1994) reminded us of the impressive range of distance education technologies available to universities, plotting level of interactivity against level of learner independence (Figure 1). The authors would be first to acknowledge that positioning a particular delivery technology on the graph is at best subjective. Location depends largely on how a technology is used. Further descriptive details are available in the Oliver and Grant publication.

More simply, the graph can be used to highlight directions of change in distance delivery (Figure 2). Arrows could be added in north, north-east and easterly directions from "one-way delivery".

THE EDUCATIONAL CHALLENGE

The current decade has seen the beginning of a re-organisation and rejuvenation of distance education in Australia, driven substantially by advances in telecommunication technology. New opportunities for remotely located students to interact with each other and with university lecturers have encouraged more venturesome educators to explore innovative approaches to distance learning including adaptations of face-to-face practices hitherto reserved for on-campus students. Notwithstanding, distance education in Australia is still largely achieved by one-way transmission systems. The situation is ripe for substantial change; for creative commercial input as well as internal review.

There can be little doubt that the convergence opportunities described in this paper will stimulate universities to re-think their educational priorities. Increasingly, universities will be pressured to give budget precedence to electronic delivery systems. Students, even those close to university campuses, will be able to complete substantial proportions of their degrees through electronic access. And in future, teachers will become as familiar with their students from screen images as from face-to-face contact. A hub of campus activity will be the multi-media interactive communication centre. Students world-wide will be able to enrol and study at the University of their choice via global multi-media highways without leaving home. Each university of note will evidence a global hinterland exercising a capacity to interact instantly "in real time" with its students at will. Since these dramatic changes are already upon us universities must reconsider established policies and practices of educational delivery. For example:

- (i) Universities are considering options and issues arising from emerging interactive technologies, economic, social and industrial as well as educational (Oliver and Grant, 1994).
- (ii) Interactive global communication introduces the prospect of increasing choice by students for university places and greater competition for students internationally. Universities can be expected to increase their geographic spheres of influence.

- (iii) University strategic plans will increasingly refer to current and projected developments in communication technology; the impact of technology on distance education as teaching/learning support systems; the effectiveness of teaching using convergent technologies; and the responsiveness and achievement of students using convergent systems. Monitoring will become increasingly important as investment in hi-tech communication systems grows and with that growth an increasing demand for performance appraisal (Renner, 1993).
- (iv) University budgets are beginning to reflect the increasing importance of effective global communication. Hardware and software to support advanced communication systems will take an increasing proportion of recurrent funds, as will related support services. Likewise, training programs for university staff specialising in distance education, training of technical support staff, additional support for multi-media curriculum development will require budget allocations.
- (v) Strategies will be needed to monitor the effectiveness of the new technologies: monitoring the effectiveness of implementing new equipment, new software, new methods of delivery (Renner, 1994); monitoring the possibility that educational policy will be shaped by the technology, the opportunities it affords and the limitations it imposes (Oliver and Grant, 1994); monitoring the possibility that diversity amongst universities could be diminished by over-arching global delivery systems that ignore international boundaries and cultural traditions.
- (vi) Enterprise bargaining in universities will necessarily take into account the potential of technology to focus responsibility for multi-media delivery on relatively few academic specialists supported by tutors. That is to say, university policies will need to address industrial issues arising from technological change (Renner and Grant, 1993; Isaacs, 1994).
- (vii) University teachers will need to become more technologically literate, more aware of the non-neutral nature of technology, more skilled in the use of convergent systems, more willing to debate issues exposed by new communication systems, less inclined to be content with established educational practices (Beynon, 1993).

We are rapidly approaching the time when denial of convergent communication systems will be tantamount to a denial of the right to be a university. At the same time, however, universities are essentially about people; for people. The fostering of individuality and individual talent is at the heart of university life. It follows that multi-media must be kept in perspective; an educational tool, a facilitator of individual learning and creative expression, rather than a technological imperative.

CONCLUDING COMMENTS

What of the future? Will converging communication technologies impact increasingly on university education? Or, will universities lag behind the corporate sector in the adoption and implementation of convergent technologies? This paper has evidenced the opportunities and rewards for institutions prepared to invest in integrated systems. Meanwhile, however, stand-alone products and services such as electronic networking, desktop video, telecommuting and interactive television continue to penetrate the education market. Impressive though these technologies may be, the technological and educational breakthrough awaited by many will only be achieved by creative integration akin to the Virtual Campus.

Predictably, convergent interactive technologies epitomised by the Virtual Campus will rapidly, perhaps painfully, become part of our educational infrastructure. By the turn of the century, enhanced by optical fibre and satellite, they will have enabled global access to education and prompted reviews, re-assessments and re-orientations of university priorities. Moreover, improved access will offer opportunities for academics to develop new styles and strategies of programme delivery, explore emerging curriculum opportunities, adapt teaching/learning skills. Doubtless, educators will respond to these opportunities with varying degrees of enthusiasm. On one hand, some academics are already suspicious of educational changes driven by technology (Postman, 1993; Carey, 1993). Others, however, having experienced the opportunities for interaction with students provided by the Virtual Campus, support the application of convergent systems for education; their potential to achieve on a global scale what has been regarded as best practice within the walls of a university classroom.

Given the mix of positive and cautious responses from academics, what does the future hold for our own Virtual Campus? Implementation is proceeding prompted by encouraging support from users. But further developments cannot be taken for granted. Critical questions continue to be raised. Will the investment be cost effective? How many academics will willingly adopt the technology? Will confidential communications between student and tutor be adequately protected? Student/staff surveys have been conducted, reports prepared, evaluations undertaken, in each case recommending the Virtual Campus Board of Management to proceed with expansion and up-grades of the system. Sustained implementation, however, will depend on a complex of factors including leadership and financial support, educational and technical R and D, progressive upgrades and articulation, training of educators and technicians to support the use of convergent communication systems for education. Monitoring of two-way broadband interactively and the effectiveness of the technology targeting level, quality and scope of implementation will play an increasingly supportive role (Renner, 1993).

Convergent technologies enhanced in performance by global networks will, before long, provide interactive access to all people - "anyone, anywhere, anytime". But global education will not be for all universities. The inter-continental market for students is more likely to be dominated in the twenty first century by powerful university clusters - the educational multi-nationals. Smaller, less influential universities, unwilling or unable to adopt convergent communication systems may fade while the stronger compete head to head for students. Whatever the outcome, university education must endeavour to retain existing strengths, avoiding pre-packaged courses bereft of spontaneity and debate; courses delivered more for financial gain than educational fulfilment. Perhaps what is needed is an additional form of convergence, one which integrates a vigorous technology with the needs and wishes of people.

This paper began with a quotation. As universities grow to understand the importance of that quotation, so too will competition increase in the student marketplace. Its implications take us well beyond the technology into such areas as selling new opportunities to academic staff, providing adequate support and encouragement for high-tech distance delivery and identifying niche markets, quality courses and talent to enable effective implementation of emergent technology.

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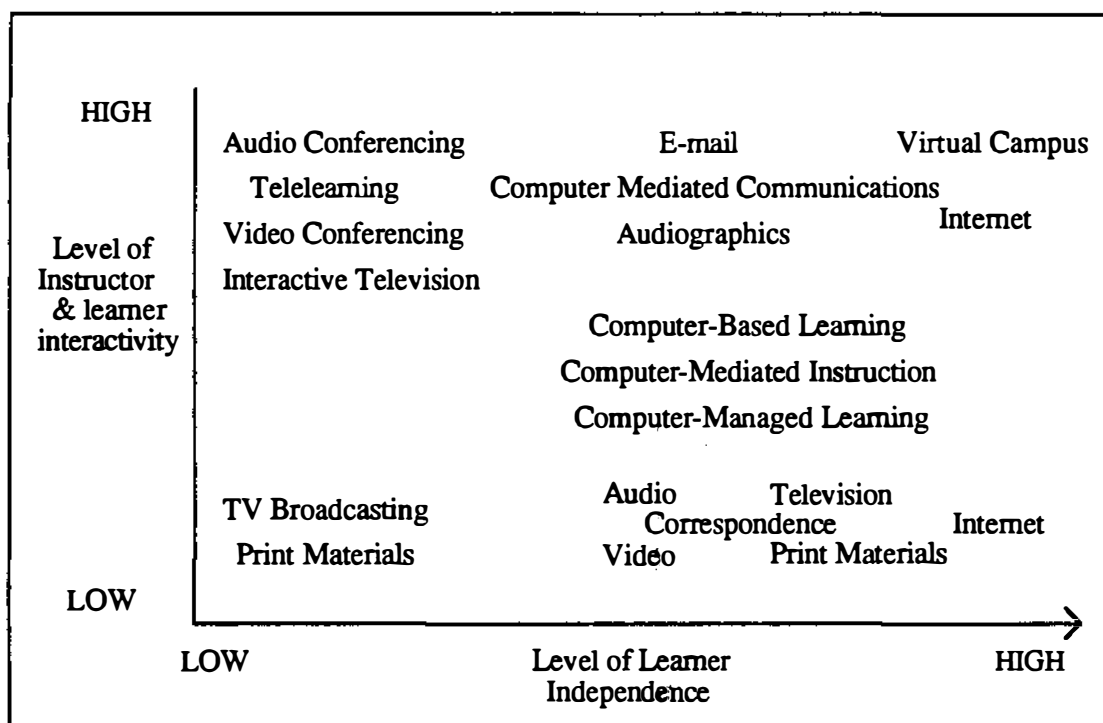


Figure 1 Distance Education Technologies
(after Oliver and Grant, 1994)

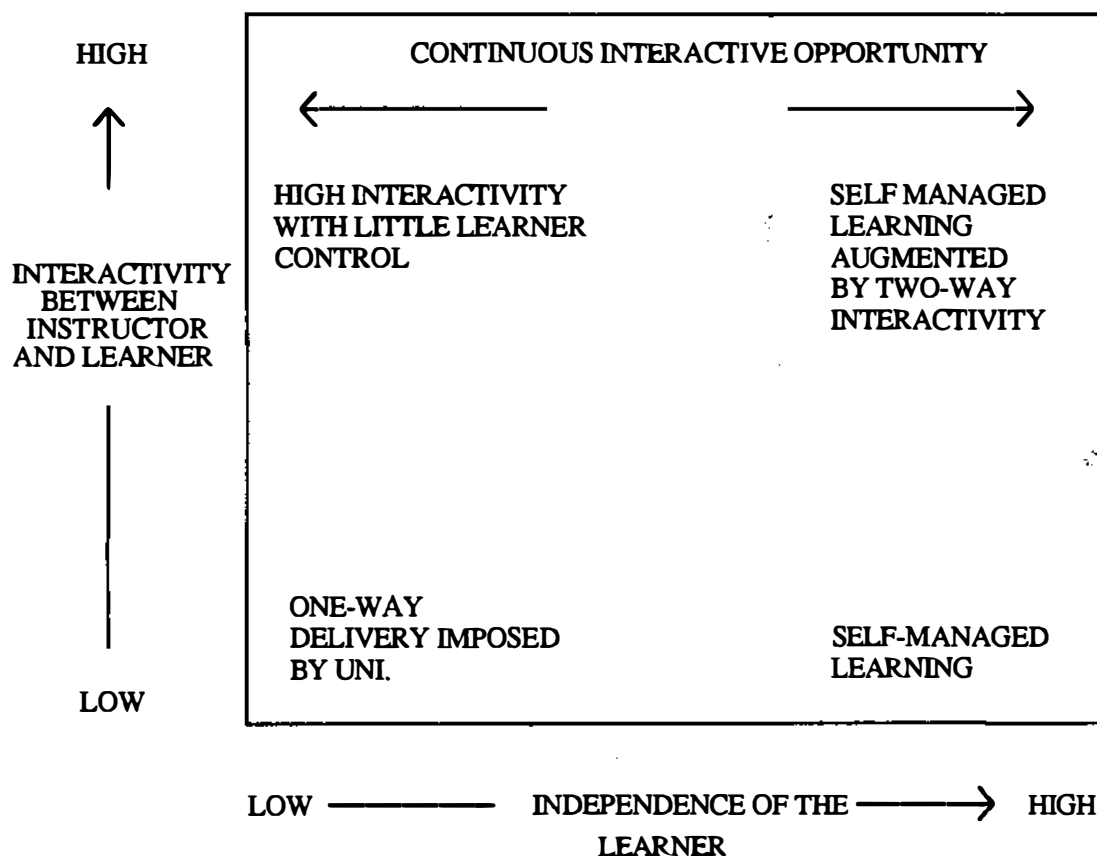


Figure 2 Categories of Learning

GEOSCIENCE EDUCATION FOR ABORIGINAL STUDENTS AT CURTIN UNIVERSITY OF TECHNOLOGY, PERTH

ABSTRACT

Australia's well being is largely dependent on exploration, mining and processing of minerals and energy resources. During the last twenty years state of the art technologies in geology, geochemistry and geophysics have revolutionised mineral exploration and development, and influenced the provision of geoscience education and training in Australian Universities. However, the participation of Aboriginal and Torres Strait Island students in geoscience education is under represented. The first Aboriginal student to graduate in geology at Curtin is likely to be in 1995.

This paper is based on two premises, firstly, the need for geoscience education for Aboriginal students due to their close affinity to land over several thousand years and the impact of mineral resources on their future well being, and secondly the resources and modifications required to develop curricula to meet needs of the students who have been disadvantaged in the past years.

The Associate Diploma in Science and Technology was first introduced in 1994 by the Centre for Aboriginal Studies, Curtin University of Technology. The diploma aims to emphasis both Aboriginal and Western scientific knowledge. My experience in the implementation of geoscience unit, namely Geological Systems 102 within the diploma course is discussed in the paper. The aim of the unit is to introduce students to earth processes and products and the resulting land forms due to external and internal earth processes. After completion of the Associate Diploma some of the students are expected to progress to a degree course in geoscience.

INTRODUCTION

The School of Applied Geology, at Curtin University provided the teaching of two geology units, namely Geological Changes 111 and Geological Systems 102, for the first year of the Associate Diploma in Science and Technology introduced in 1994 by the Centre for Aboriginal Studies. The course is specifically designed for Aboriginal and Torres Strait students who may not have a background in science but have interest in science and technology. The diploma aims to emphasise both Aboriginal and Western scientific knowledge. The focus in the geology units of the course has been on field work, laboratory work and projects based on field work. After completion of the first year of the course the students take electives from the main course being offered at Curtin University in their second year. After satisfactory completion of the diploma the students can proceed into a science degree course at Curtin University, seek employment in mineral industry/science and technology or continue in the area of Aboriginal studies.

The applicants to the course must be at least 17 years of age on entering the course, and no previous knowledge in the area of science is required but the applicants must have sufficient literacy and numeracy skills. Mature age applicants are actively encouraged to apply. In the 1994 intake more than 50% of students were of mature age. The term geoscience in this paper refers to branches of geology, e.g. palaeontology, mineralogy, petrology, stratigraphy, geophysics, geochemistry etc. The glossary of geology (second edition, 1980) defines geoscience as a short form sometimes used

in the plural, denoting collective disciplines of the geological sciences. The term as such, is synonymous with Geology; a synonym of earth science.

MINERAL INDUSTRY

The rich geological heritage of Australia has endowed it with mineral and energy resources of world class. At present Australia ranks among the top five mineral producers along with USA, Canada, South Africa and C.I.S. During 1993 export earnings from minerals and energy sector accounted for nearly 40% of Australian income. Western Australia's share of this export income was over \$12 billion dollars. Western Australia is a major producer of gold, nickel, iron, aluminium, diamonds and mineral sands. The state at present is enjoying continued expansion of its mineral industry. In spite of benefits derived from mining by the Australian community, and the availability of state of the art education in geoscience available to Australian students, the participation rate of Aboriginal and Torres Strait Island students has been miserably low. To remedy this low participation rate, the introduction of an Associate diploma in Science and Technology by the Centre for Aboriginal Studies, Curtin University is a move in the right direction. The support from the mining industry for this course has been very encouraging.

The recent Australian High Court decision on the Mabo case and the subsequent native title legislation will certainly impact on mineral exploration and mining in Australia. The geoscience education of the wider Aboriginal community would enhance the processes of reconciliation and avoid conflict and confrontation in the better interests of all concerned. According to Gordon (1994), on the third of June 1992 the High Court effectively rewrote Australian law on the impact of colonisation. The late Eddie Mabo and other had fought for ten years to have their native ownership of Murray Island in the Torres Strait recognised, and overturn the legal actions of *terra nullius*.

Following the Mabo decision, the Australian Government legislated the Native Title Act, effective from January 1, 1994. This legislation has three components. Firstly, it recognises native title rights and contains processes for determining who actually holds those rights. Secondly, it allows validation of past acts and future intentions of the governments. Thirdly, it establishes an indigenous land fund to help Aboriginal and Torres Strait Islanders to acquire and manage land where the claim to native title has been extinguished. Like the rest of the Australian community, Aboriginal and Torres Strait Islanders also want a prosperous future for themselves and their children, and education and training is an essential element for this prosperity. The employment of Aboriginals in mineral and the mining industry is on the increase, and many mining companies now employ Aboriginal Liaison Officers for whom geoscience education is of tremendous benefit in setting up cooperative developments and commercial activities.

THE ASSOCIATE DIPLOMA

The two year Associate Diploma in Science and Technology was first introduced in 1994 by the Centre for Aboriginal Studies, Curtin University, for Aboriginal and Torres Strait Islanders. The diploma has been developed in consultation with the faculty of science and industry within Western Australia. The course is unique in that it contains facets of both Aboriginal and Western Scientific knowledge which complement one another. After completion of the course the students can proceed into science degree courses at Curtin University, seek employment in industry related to science and technology or proceed into research into Aboriginal aspects. According to the Centre for Aboriginal Studies Report 1993, the aims and objectives of the Associate Diploma in Science and Technology are:

- To enhance employment potential for its graduates in the area of science and technology.
- To provide Aboriginal people with opportunity to gain the necessary skills and qualifications to undertake and succeed in a science degree course at Curtin University.
- To enhance understanding of new developments in science and technology so that they may be used within Aboriginal communities.
- To develop understanding and advance Aboriginal knowledge in the area of science.

The full-time two year course of four semesters has a weighting of at least 400 Credits, which represents about five units per semester. The first year of the course can be considered as a pre-university year, and consists of units like Communication Science and Technology, Environmental Biology, Measurement Science, Statistics, Aboriginal Studies, Environmental Chemistry, Energy and Technology, Mathematical Functions, Geological Changes and the Geological Systems. My experience and strategies adopted in teaching and assessment of the unit Geological Systems is discussed in this paper, and comments are also included for future developments in geoscience education.

The second year of the course includes units like Working Across Cultures, Environmental Chemistry, Calculus, Science Technology Projects, Field Experience and Electives in the areas of Geology, Physics, Biology, Computing, etc.

THE GEOLOGY UNITS

The first year units in the course are Geological Changes 101 and the Geological Systems 102. The Geological Changes 101 has 3 hours/week student contact, and it includes introductions to basic concepts of geology, structure and nature of the crust, plate tectonics and crustal evolutions. Minerals and rocks, elementary igneous and metamorphic geology. The laboratory and tutorials are supplemented by two one day trips to areas in the metropolitan region where igneous and metamorphic geology is exposed.

The geological systems 102 has also student contact of 3 hours per week, and the syllabus includes external geological processes and land terms, geomorphology, sedimentology, introduction to palaeontology and stratigraphy. The lectures and tutorials encourage participation of students in discussions because a number of them have worked as prospectors in Western Australia. The lectures were supported by field excursions in the metropolitan area. The laboratory work was undertaken on geological samples collected during the excursions. Informal discussions during lectures and laboratories encouraged communications amongst students of different age groups and the staff. Extra tutorial assistance where required was provided. The procedure followed for assessment of the unit consisted of laboratory work, test and the field report. The students were encouraged to discuss their assessment and reports following the completion of the assigned tasks. The students were encouraged to work at their own pace and extra tutorials were provided as deemed necessary on an individual basis. Students were provided with copies of the material used during the lectures and tutorials, and they were encouraged to refer to publications and reports available in the library.

STUDENT PERFORMANCE

From my several years of university experience, teaching to a diversity of students from different cultural backgrounds, I found the performance of Aboriginal and Torres Strait students in the unit to be on a par with other students. The pass rate in the unit was 81%, from a group of 16 students, 6 of them obtained over 70% marks. Four students from this course are expected to continue their studies in mining, mineral science and geology at university level.

FUTURE DEVELOPMENTS

It is anticipated that a number of students after completion of the Associate Diploma in Science and Technology would proceed to study mining, geology, geophysics, mineral processing and mineral economics at Curtin University, as the employment prospects in mineral industry appear to be very good. Other geoscience programs which could be developed for Aboriginal and Torres Strait Island students are:

- Short custom designed courses of 8-10 weeks duration for the Aboriginal rangers employed by the community and government in national parks and reserves.
- Popular lecture series emphasising the importance of geology in mineral exploration and mining compatible to Aboriginal land ownership.
- Co-operative Geoscience Program. A four year degree program in geoscience consisting of six semesters of academic study and two semesters of work experience in mineral industry or government organisation, based on a model proposed by Sappal (1983) for the developing countries of Asia-Pacific region. The program is designed to train students in exploration and applied geology. It begins with an introduction to geology, materials and processes. This precedes and complements development of concepts, computing and measurements in geology and compilation of geological maps. These in turn lead to resource geology, energy resources, mapping, geochemistry, geophysics, hydro-geology, environmental and engineering geology, mining geology and mineral economics. The program has a strong emphasis on practical applications of geological knowledge.

Each of the two work-experience semesters in the program are of six months duration. The students are placed in industry employment, and they are solely responsible to their employers. The university monitors the progress of students on an informal basis and in certain cases requirements of formal report could be waived due to confidential nature of the exploration activity. The work experience semesters are given due credit along with academic semesters of study for the program. The benefits of a three way partnership between the student, employer and university are:

1. The income generated from work experience is available to students to finance their studies.
2. The students become more aware of the mineral industry environment in which they are likely to be employed after completion of the program.
3. The students are exposed to problems of mutual importance which can be followed in joint research projects at postgraduate level.
4. The industry is able to employ graduates based on their performance during the work experience component of the program.
5. The staff derives satisfaction in training students who are well motivated and who can relate theory to practice in mineral industry.

CONCLUSIONS

The need for geoscience education for Aboriginal and Torres Strait Island students is vital for the well being of Australia and development of co-operative ventures between Aboriginals and mineral exploration. The hands on experience in geoscience is of utmost importance in training graduates, hence extra resources in terms of staff and facilities for fieldwork are essential for success of any program in geoscience.

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in association with

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FEEDBACK SHEETS AS A FORM OF ASSESSMENT TO SUPPORT LEARNING

ABSTRACT

Assessment has been a problem area in the School of Design for a long time. Issues include: the diversity of things to be addressed, the degree of precision that is possible/desirable, the amount of time that can/should be devoted to assessment, questions of subjectivity and objectivity, fairness, competition and co-operation and the contribution that assessment, as a form of feedback, can make to the learning process.

Following our recent programme review, and in the context of Quality Assurance, the School had prepared a strategic plan with the help of an external facilitator. A high priority has been given to the development of standard assessment processes. This task has been undertaken by a team of staff and students.

Of all the systems used in the school the ones which seem most promising are those based on feedback sheets. These sheets list all the criteria relevant for a given project. A student's performance according to each criterion is recorded on a scale. It is then possible to derive from these records an overall grade or mark for each student. Team members are looking at variations on the theme of feedback sheets and preparing an inventory of criteria. Our underlying objective is establishment of a process which is manageable while being clearly focussed on support for learning.

We will present our conclusions at the Forum and are looking forward to feedback which may help us finalise our proposals for adoption by the School.

INTRODUCTION

We may be re-inventing the wheel, though our wheel may look a bit different from other people's. Having developed feedback sheets as a solution to some of our own problems in the School of Design we have found it reassuring rather than disappointing to find that others before us have come to similar solutions. We hope that some people with experience of other kinds of feedback sheets are here. We do not have a well oiled system with a proven track record to present; we have only a prototype. We see this occasion as an excellent opportunity to have it looked at before we introduce it in our courses.

PREVIOUS SYSTEMS OF ASSESSMENT USED IN THE SCHOOL AND ASSOCIATED PROBLEMS

Design is not a typical university course. We do not have formal exams. Assessment is continuous in that marks for each unit are derived from the students' performance in a series of tasks spread out over the semester. For example: students tackle problems such as the design of a poster or a chair; they develop skills in drawing, photography and other media; they make presentations and write critical essays.

We used to award marks - sometimes out of 100, usually out of 10 - for solutions to design problems, folios of drawings, essays etc. We have also experimented with the A, B, C grading systems. And we have tried a simple Pass/Fail system and then an elaborated one where P for Pass could be modified with a + or a -. The mark or grade was reinforced by feedback: written comments on essays and verbal comments on design work and studio exercises. In some situations we found ourselves needing to make the same kinds of comments over and over again so we began to develop standard forms for the purpose. These evolved into feedback sheets which, in turn, became a basis for the marks or grades.

As far as the learning process was concerned our old systems, especially those systems of marks which perpetuated the high school model, were in many ways counter productive. Students tended to focus on getting good marks rather than developing as designers. This meant that some would keep doing what they could already do well rather than explore new media and that they would choose safe solutions rather than take risks. Marks were received as a kind of payment for effort. Emotional energy, which could have been devoted to learning, was often used up in brooding over what were felt to be unfair marks. A contributing factor was often the different priorities attached by students and tutors to the diversity of things that might be marked: ideas, skills, knowledge, understanding, effort, professionalism, participation etc. Also the illusory precision of marks gave some students a false sense of their own position on an imaginary scale of worth. Some of the more competitive students were reluctant to share ideas or make any suggestions that might help another student up this scale.

Meanwhile demands on tutors' time has been increasing and the task of ensuring that marks are indeed fair has become more demanding as has the task of providing comprehensive feedback to students. Our problem, therefore, is part of the larger problem of "how to teach better for less". At the 1993 Teaching and Learning Forum, Richard Berlach (1993:210) was probably speaking for most of us when he said that "... a goal worth striving for is one which ensures that high-quality feedback is maintained while at the same time making the whole exercise of marking a time-efficient one."

DEVELOPMENT OF A NEW SYSTEM

Student dissatisfaction with our assessment procedures was noted during our recent program review (O'Connor, 1994). The review committee recommended that these and other procedures, as well as the management structure of the School, be looked at with the help of an external facilitator. This was in line with our own feelings and also came in the midst of the general anxiety over Quality. Whatever one may think of the Quality issue and the ranking of universities it looks as though it is here to stay. We decided to get very serious and make sure we would get it to work for us. We committed ourselves to an intensive series of workshops and engaged an expert facilitator, Dr Janette Hartz-Karp, from the Australian Quality Council. The result was our new management structure and a strategic plan. Issues of teaching and learning are now dealt with by a team of staff and students. High on that team's agenda was the matter of assessment.

It was agreed that we should develop a standard system for use throughout the School. This Teaching and Learning Forum provided the catalyst. It gave us a deadline to work towards and offered an opportunity to run our proposals past an impartial audience who, as we hope, are both experienced and sympathetic. We are also sending our proposals to the members of our Advisory Committee. Suggestions from that group, as well as from the present audience, will be reviewed and may be incorporated in the system we plan to introduce in first semester.

Six student members of our teaching/learning team were able and willing to work with School staff over the holiday period. We have had four sessions of up to five hours each. Problems were identified, issues debated and proposals discussed.

A survey of some existing systems had been conducted. Student answers to a questionnaire confirmed our view that the feedback sheet system shows most promise of being able to deliver "the mostest for the leastest". Sheets used by different members of staff were reviewed as well as one from another discipline (Faculty of Education) and one from overseas (HNC).

We also looked at other models for possible insights. Figure skating and gymnastics are two activities where judgements of performance must be quick, consistent and fair, made in public and under pressure. In both activities there are many dimensions of performance which must be judged simultaneously. Significantly for our purposes both have aesthetic as well as technical dimensions and both admit the possibility of a perfect score (notably achieved by Torvill and Dean and Nadia Comenici). In both cases the criteria are very clearly spelt out and are under constant review, especially those dealing with degrees of difficulty. (We were interested to learn that the routines which earned Nadia Comenici perfect 10s in Montreal are no longer considered particularly difficult and would not be worth much more than eight today. And we saw at Lillehammer how the rest of the World has caught up with Torvill and Dean.) We are very grateful for the information supplied by international figure skating judge Tony Jonikis (1994) and the chairman of the W.A. Gymnastics Judging Assembly Bill Barr (1994).

In our workshop sessions there was early disagreement about whether or not it should be possible to get 100% for a solution to a design problem. The winning argument was that other marks, like 80%, would be meaningless if 100% were impossible. The key for design, as for skating and gymnastics, is the principle of degrees of difficulty. So a solution which might earn 100% for a first year student would not earn so much for a student in third year.

A great deal of discussion was devoted to establishing an inventory of assessment criteria. Some criteria were controversial, seeming to depend on the subjective opinion of the tutor. But we agreed that whatever it is that makes one design solution work better than another it should be on the list. At the 1993 Teaching Learning Forum, Paul Green-Armytage (1993) argued against allowing ease or reliability of measurement to determine what should count in students' work. We agreed that there could be cases where a desirable quality in a design solution would be "magic". Rather than exclude this as unmeasurable we agreed that a degree of "magicness" could be established by the consensus of an impartial group of people, preferably representative of the intended audience. And even this consensus would not be the average subjective opinion. We are impressed by the arguments put forward by David Best for the objectivity of artistic appreciation: "If an activity is not objective, then the notion of standards cannot be applicable to it, since to set a standard necessarily implies the possibility of citing reasons which refer to observable, objective phenomena" (Best, 1980:14). Even as we say that a design solution has magic we must be able to point to those features which give it that quality.

PROPOSED SYSTEM - FROM FEEDBACK SHEETS TO END OF SEMESTER MARKS

A strong influence on our work has been the philosophy and pioneering methods of assessment at Alverno College in the U.S.A. Their approach to assessment has been defined as "a multi dimensional process of judging the individual in action" in a paper by Georgine Loacker, Lucy Cromwell and Kathleen O'Brien (1986:47). Feedback is an integral part of the process. The aim is to answer as completely as possible the student's question "how am I doing?"

All courses at Alverno College focus attention on a set of eight core abilities. We have adopted a set of our own, similar but not identical, and have grouped our assessment criteria as we see them relating to these abilities: (1) Willingness to accept **responsibility**. (2) Capacity for **co-operation**. (3) Ability to conduct **research**. (4) Capacity for **critical thinking**. (5) Capacity for **innovation**. (6) **Problem solving** ability. (7) **Manual and technical** competence. (8) **Communication** skills.

All assessment criteria and a full account of our procedures are set out in *Assessment Explained*. Copies of this document will be available from the School office and will be given to all Design students. Comments and suggestions for changes will be welcome from anyone, but all staff will be expected to use the same system. No variations will be admissible until they have been formally approved.

Feedback sheets will be given to students for each component of each unit in the course. On these sheets will be recorded judgements of the students on a five step scale for each criterion listed. The five steps equate with the five levels of achievement recognised by the University: *High Distinction, Distinction, Credit, Pass* and *Fail*. From the judgements recorded on the feedback sheets students will learn where their strengths and weaknesses lie and where they need to direct their efforts for improvement.

The records on the feedback sheets can also be turned into numbers for the purposes of establishing a mark or grade: 0 for something missing, 1 for a *Fail*, 2 for a *Pass* etc. With several criteria being scored like this the spread of numbers could be very large and it would be possible to produce a list of students in finely ranked order in accordance with these records of their performance. For two reasons we will not do this but will convert the overall record for each student's performance in each component into a simple grade which will correspond to one of the five steps.

The first reason is that while the judgements may be objective they will still be personal. The possibility of disagreement, however slight, means that absolute precision of marking is impossible. (We see this in the judges' scores for skating and gymnastics. Rarely are all judges in perfect agreement. Their scores may range from, say, 5.2 - 5.6, but it would be an extreme aberration if one judge's score was a long way outside that range.) A finely ranked order, therefore, would be misleading. Furthermore a large range of marks would take us back to the old situation of counter productive competition.

The second reason (only admissible because of the first) is that a long time would be needed to count up each score. We have found that it is quite easy to scan the pattern of marks on the sheets and determine where the total would belong if there was a spread of marks corresponding to each step on the scale. It is possible to determine an overall grade quite quickly and without doing the arithmetic. At the same time the students could still do the sums themselves and could get grades altered if they could show that a mistake had been made.

Producing the final marks for each unit is also reasonably straightforward. A unit might have major components and minor ones; grades for the components would be weighted accordingly. We have linked particular numbers to the grades. When a final mark is worked out from those numbers it comes within the correct range for one of the levels of achievement recognised by the University. The way it works is spelt out in detail in *Assessment Explained*.

It is true that in the list of marks for each unit at the end of semester the students are likely to be in a finely ranked order. But at that stage competition is not an issue. During the semester several students would get the same grade for a project and for most of the students that would be a *Credit*. Students would know where they stood generally. They would also have the more detailed information. A *Credit* would be a boring grade to get but on the feedback sheets a student might find one or two *High Distinctions* and feel well rewarded. They might also see one or two Fails and feel suitably chastened.

We hope this system will be quick and easy to manage and that it will provide effective feedback to support the students' learning. Perhaps at a future Teaching and Learning Forum we will be able to present a report on how it has worked out in practice.

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STUDENT FACILITATORS: MAXIMISING THE OUTCOMES FROM TUTORIAL CASEWORK, LITERATURE ANALYSIS AND PROBLEM SOLVING

ABSTRACT

This paper initially examines briefly the rationale for using a case study approach and some of the key ingredients for its successful use as a teaching tool. Case studies have been a central feature of the teaching programme in Advanced Management Accounting (AMA), a third year undergraduate accounting unit at VUT, for a number of years. However, in response to mounting demands for graduates to have better communication and analytical skills, as well as some perceived problems in using the case approach at VUT, staff have recently been experimenting with the use of student facilitators. This approach and how it evolved is explained and some of the benefits, problems and pitfalls with the approach, as perceived by both staff and students involved in the programmed, are briefly outlined. The authors question whether such an approach needs to be introduced in other subjects earlier in the course to ease the transition to a different approach to teaching and learning.

INTRODUCTION

There has been much written in support of the case approach to teaching in the social sciences and in the teaching of business studies and accounting in particular (see for example Gragg 1954; Anthony 1974; Christensen and Hansen 1987; Harvard Business School 1984; Knechel 1992; Moores and Booth 1994; Wines, Carnegie, Boyce and Gibson 1994). Cases provide a more interesting real life organisational context in which to explore decision making techniques and options, and arguably develop students' problem solving and analytical skills in ways that traditional repetitive exercises cannot. Students need to learn how to apply technical skills and knowledge in a real life situation, where there is rarely one correct answer but merely several possible alternatives with different consequences, and where the decision making process often requires significant value judgements.

ACCOUNTANTS AND COMMUNICATION SKILLS

In addition there has been much written and said about the need for accounting graduates to have improved communication and problem solving skills in order to cope with a rapidly changing commercial environment and the much broader role expected of accountants. Major inquiries and reports on accounting education in Australia (Matthews 1990, ICAA 1994) and in the United States (Accounting Education Change Commission 1990 a & b) have pointed to the need for students to be taught the skills and strategies that help them learn more effectively, and to increasing demands on accountants, particularly in the areas of communication and analytical skills. Any regular reader of the financial press or attendee at accounting conferences will have seen or heard a plethora of business and government leaders expounding the need for accounting graduates to have much more highly developed communication skills than traditional accounting education has been able to deliver.

CASES AND COMMUNICATION SKILLS

The participative approach to learning which is central to the case study method of teaching is viewed as an invaluable tool in the quest to improve accounting graduates' communication and

analytical skills. For example Knechel (1992, p206) makes the point that:

"...by being forced to actively participate in a discussion a student better internalises his or her own ideas while preparing to communicate with others. Also such communication assists other students to develop their own understanding of the problem, alternatives and solution..."

THE ROLE OF THE STUDENT AND THE INSTRUCTOR

The role of the student and the role of the instructor are argued to be critical for the success of the case teaching method. The Harvard Business School (1984) identifies four key rules of student conduct, described as "the four P's":

1. Preparation (i.e. necessary pre-reading, quantitative and qualitative analysis)
2. Presence (i.e. students must be present to be involved)
3. Promptness (i.e. entering class in the middle of a discussion inhibits learning and may distract others)
4. Participation (i.e. learning is facilitated by being actively involved in discussion and problem solving)

The School also identifies "the three C's" of instructor involvement:

1. Careful preparation
2. Control of discussion
3. Concern for students

Most educators would probably see these as essential ingredients of any good teaching, but case study proponents would stress that they are even more critical for the effective use of case studies.

OUR EXPERIENCE AT V.U.T.

The use of case studies is certainly not new and they have been a central feature of the programme in many, if not most, VUT post-graduate and under-graduate accounting units, including Advanced Management Accounting (AMA), for a number of years.

While the role of the instructor is critical in managing the learning environment and planning and controlling the learning experience, our experience shows that it can all amount to nought if the students do not do their bit in respect of the four P's.

Thus we have found that the single most important role of the instructor has been to ensure first of all that the students are present, prepared, prompt and, perhaps more importantly, that they are able and keen to participate.

PART-TIMERS AND POST-GRADUATES

In respect of our post-graduates and working part-time students, who generally have acquired the work and general life experiences to confidently participate and contribute to case study analysis, achieving the required level of participation and desired learning outcomes has been perhaps easier to accomplish. The simple incentive provided by a portion of assessment being based upon attendance and participation has been sufficient to ensure that, for the most part, people come adequately prepared and able and willing to participate. The additional measure of nominating one

or more people to lead discussion in either smaller syndicate groups or as an entire class group has also been found to be reasonably effective, as long as the nominated person(s) are very clear that their role is *not necessarily* to provide an answer as such, but to be so familiar with the circumstances of the case as to be able to lead a worthwhile discussion.

FULL-TIME UNDER-GRADUATES

Our typical under-graduate classes are predominantly made up of relatively recent school leavers with limited work experience, and include a high proportion of students from a non-English speaking background. For many of these students speaking up in class may be a complete contradiction to the way they have been raised and educated. Many find the pressure to present a case or lead a discussion very traumatic and need to be very carefully encouraged to build their confidence. Of those who don't have a cultural or historical aversion to a participative learning environment, many demonstrate little self-generated motivation to be an outstanding student of anything in particular - let alone AMA! These factors can make it more difficult to ensure that students have done the necessary preparatory work and are keen to participate.

Whether this is the result of 14 years of accumulated educational experience, or cultural, social or economic pressures is something about which lecturers and tutors continue to speculate, but it is not for this paper to address. Each semester student evaluations are analysed and staff continue tinkering with subject content and methodology, in an effort to make the subject more interesting, relevant and motivating for students, and most importantly to try to improve learning outcomes.

ASSESSMENT AS A MOTIVATOR

Introducing attendance and participation as a small proportion (5%) of the assessment component, and then later increasing it to 10% were seen as having had a positive influence on students' preparation efforts, and is believed to be worth maintaining in spite of the problems of ensuring consistency between different tutors across several campuses.

STUDENTS AS PRESENTERS/DISCUSSION LEADERS

In an effort to ensure students prepared effectively for discussion of cases, various tutors have experimented with nominating an individual or two or more individuals at random, with notice or without notice, to present or lead discussion amongst the entire group or within smaller groups. Some tutors have nominated students at random and without notice, in the belief that if all students know that in any class they could be called upon to lead the discussion, then *all* students will be motivated to do the necessary pre-reading.

However history has shown that it is a tall order to expect students to have the depth of understanding of one (sometimes more) case(s) to be able to lead a discussion at a moment's notice, when they have limited experience of leading discussion in a participatory learning environment, and are more used to simply presenting prepared answers. For many of our students, such an approach arguably creates unnecessary and unfair trauma, and in the past has even led to absenteeism. Evaluations at VUT have shown that AMA students have a clear preference for being given at least a week's notice of which journal article, case or problem they are expected to present.

Given notice, nominated students generally prepared for their allocated task but, perhaps as a consequence of their previous experiences in presenting 'answers', most seemed to perceive their role as simply to provide an answer and found it extremely frustrating if they could not quickly perceive an obvious path to 'the answer'.

STUDENTS AS FACILITATORS

Nominating students as facilitators instead of presenters may seem a semantic change, but it is part of a strategy to try to increase the quality of preparation and participation by all students.

We were trying to change the way students prepared for discussion of cases and problems. Despite repeated efforts by staff, students still tended to think that the role of the presenter was to provide 'the answer' to the other students so that non-presenters felt little obligation to do any serious preparation for tutorials.

At the start of the semester there is a long discussion on the role of the facilitator(s) nominated for each journal article, case or problem, and on the roles expected of the other students. Facilitators are given some guidelines and hints on suggested approaches and constantly reminded that their role is not to just provide an answer. They are to manage a discussion, selecting the important issues and preparing key questions around which to structure a discussion.

In each session teaching staff need to focus not just on the content and whether key points are being adequately covered, but also on making sure students reflect on the way the process is being managed by the facilitator, highlighting and reinforcing good approaches and tactfully pointing out where approaches are not working as well and why.

SOME CRITICAL ISSUES

On reflection the approach seems to have been most effective where:

- students are given structured guidelines on what is expected of them as a facilitator and suggestions for how to prepare for and manage a discussion;
- tasks range from the relatively short and straight forward to the long and complex;
- students facilitate in pairs (or more for difficult or complex cases) and with different partners;
- students facilitate often (at least once every two weeks);
- difficulties are acknowledged, discussed and an encouraging, positive environment is fostered;
- teaching staff resist the sometimes overwhelming temptation to step in and take over the management of the discussion.

PROBLEMS/DIFFICULTIES

Some of the problems encountered by staff and students have included:

- staff finding it difficult to resist the temptation to take over to bail out students having difficulty or doing a poor job;
- initial discomfort of staff and students adjusting to a different learning environment and approach to learning;
- students' initial anxiety and wariness of the perceived lack of structure and certainty compared with earlier subjects;
- uncertainty among staff as to how to ensure technical content issues were adequately covered without taking over the management of the discussion.

OUTCOMES

It is not possible to identify any real change in student results as measured by written exam and assignments. Classes seem to be more enjoyable for the student and there is a discernible improvement in student interest and effort, but are they learning any more about AMA than they would have otherwise? Short of sophisticated research using controlled testing we may never know. However it has been possible to identify a number of clearly beneficial outcomes since introducing student facilitators:

- dramatic improvement in all students' communication skills and confidence throughout the semester;
- a more collaborative learning environment. Non-facilitators tend to prepare better to make it easier for the facilitators, as they know how hard it is when they are trying to manage the discussion and people have not prepared adequately;
- student recognition of the visible improvement in their own communication skills and confidence;

FACILITATORS IN ALL SUBJECTS?

The difficulties experienced by many students and some staff in adjusting to a more participative learning style begs the question whether such an approach should be adopted in other subjects earlier in the course. Staff teaching introductory technical and procedural units in accounting may see little benefit in such an approach. However given the focus on decision making which should be central to all subjects in accounting we would argue that there are likely to be significant benefits for a staged introduction to the use of student facilitators in all subjects. The relatively recent change in the structure of most undergraduate subjects at VUT to include only a single one hour tutorial (in favour of an additional hour of lecture time) has reduced the opportunity for participative learning when educational wisdom and even the professional accounting bodies indicate we should be doing the opposite.

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A REVIEW OF SOME CAL INITIATIVES IN THE UK (WITH PARTICULAR REFERENCE TO ASSESSMENT)

ABSTRACT

This paper contains a brief review of some CAL initiatives in the UK with a focus on engineering and assessment. A comparison is made of the objectives, funding and outcomes of the Australian (CAUT) programme and the UK TLTP programme. In particular the use of computers in assessment and diagnosis is considered. This assessment may be formative, evaluate process as well as product and may be used to assess students at risk from deficient study skills.

INTRODUCTION

Computers are being used more and more in education and some governments are committing large sums of money to enable computer aided learning (CAL) materials to be written. The declared objectives vary from country to country. In Australia the Committee for the Advancement of University Teaching (CAUT) has, since 1993, been awarding approximately \$4m per annum for grants up to \$50,000 (approximately 80 awarded each year). The main objective for CAUT has been the improvement of university teaching. They have specifically not supported teaching research but have looked for "products" as outcomes. The fourth round of applications for CAUT is about to commence.

In contrast the equivalent activity in the UK is significantly different. The TLTP (Teaching and Learning Technology Programme) programme commenced in 1992 and the first phase had funds of £7.5 million a year over three years. The stated aim was to "make teaching and learning more productive and efficient by harnessing modern technology". One of the largest grants was for £1,000,000 over three years to a consortium lead by the University of Birmingham for a project to develop mathematics modules. There were several other projects given similar funding (CTISS 1993a). Forty three projects were funded with first year funding ranging from £35,000 to £435,000. A second phase of funding (CTISS 1993b) has increased the number of projects to seventy six. From the above it is evident that each project has significantly more funding than the Australian equivalent and is for three years. The main motivation appears to come from the reducing of funds available for education and the need to become more efficient. The projects are also usually awarded to consortia, and this is similar to the way in which the National Science Foundation in the USA ensures that any new material will be used on more than one campus. Consortium members have to agree in advance that they will all use the material produced.

During the latter part of 1994 the author was able to visit many of the universities involved in the UK TLTP programme (26 person/project visits). The aim of this "study tour" was to investigate computer aided assessment and become familiar with the engineering/mathematics/physics materials being produced by the TLTP. This study tour was funded by the University of Western Australia from its 1994 "Quality Money" and arose because of the author's interest in computer aided learning and computer based assessment (Devenish et al, 1993; Devenish et al, 1994a and 1994b; Lyons et al, 1994; Lwin et al, 1994; Scott et al, 1994a and 1994b; Stone, 1994).

Before focusing on assessment it is appropriate to comment on the quality of the teaching material being produced. A general conclusion was that many of those who had not prepared any computer aided teaching material previously were making heavy weather of their projects. However, the few who had several years experience were well advanced and producing high quality material. There also seemed to be some unnecessary constraints imposed because of the need to have the software used on several campuses and on both PC and Macintosh computers. As an example the QUEST (Quality in Engineering through Simulation Technology) project involving nine campuses has chosen to write all its simulation programmes in LabVIEW because it is transportable across platforms. This means that on each campus there is a significant learning curve with respect to LabVIEW before software may be produced. Notwithstanding this, the project claims some significant productivity & efficiency gains (Cartwright, 1993). "In January 1993, a 10-week inter-departmental simulation-based course in Solids & Materials at the University of Surrey, delivered to over 80 engineering students, demonstrated gains over traditional methods amounting to a 23% reduction in student contact time and an even greater 50% reduction in staff delivery requirement. Further, the associated shift from passive lectures to tutor-supported computer-based workshops represented a real enhancement in the quality of provision".

When it comes to assessment much excellent work has been published in the UK, for example Gibbs & Habershaw, 1990; Ellison, 1992 and Gibbs, 1992. It was therefore expected that assessment would be a major thrust of TLTP projects and many of the projects did include some multiple choice questions. However, these questions were embedded in software that never changed and were subject to the normal limitations of this form of assessment. The author was looking for more advanced and helpful approaches using diagnostic assessment (see Devenish, 1994a) and there were only a few of these. However, there were two projects that at first sight did not appear relevant but were to prove very interesting in providing a different perspective on assessment.

DIAGNOSTIC ASSESSMENT

During the course of the visits it was apparent that there was a wide range of understanding of the phrase "diagnostic assessment". The most common understanding was that the diagnosis resulting from the assessment would indicate whether a student did or did not understand particular topics. It was not expected that any indication would be given of the misunderstandings that cause the incorrect answer.

This is significantly different from the objective of the work being undertaken by the author and his colleagues. This aims at using an Intelligent Computer Tutor to allow students to assess their own understanding. The questions are not multiple choice and an incorrect answer produces a suggestion of the possible misunderstanding that produced it. Immediate feedback is thus given and appropriate help provided. The assessment with immediate diagnosis thus becomes an integral part of the learning process, i.e. it is formative assessment.

The most advanced TLTP project using diagnostic assessment is called DIAGNOSYS and is a computer based test for basic mathematics skills (Appleby, 1994). A prototype was used in the Autumn of 1993 involving 650 students at three of the north east Universities. The current version is intended for release in the Spring of 1995. The main objective is to be able to test large numbers of students and provide qualitative assessment of basic mathematical skills. The test runs under DOS 3.0 with a time limit if requested. Various question styles are available including multiple choice, algebraic entry etc. A results file is produced and four processing programs are used to produce profiles of individual students and a group of students; a ranking of a group of students and

a text file suitable to be used with a spreadsheet package. The individual profile includes the list of skills which the student is judged to understand; the skills judged not to be understood; skills not tested due to the time limit; directions to resources for assistance. Similar information on a group can be obtained. It is anticipated that the package will be particularly useful where the quality of the incoming students is below average and it is important to diagnose any deficiencies in knowledge and understanding as early as possible.

ASSESSMENT OF TRANSFERABLE SKILLS

One of the unexpected bonuses of the study tour was the visit to the University of East Anglia and the project, "Computer aided Assessment of Transferable Skills (CATS)". This is a single institution project under the leadership of Dr Roy Dowsing (see Dowsing et al 1995). The transferable skill being assessed is that of word processing and the motivation came from the large number of students being taught and the desire to give them a formal qualification. This project was of great interest to the author as it was the only one that was found to be considering process as well as product. Most assessment software examines an answer or answers (product) and is not able to examine the method and steps used (process). At East Anglia a very well informed (see Dowsing for an excellent list of relevant literature) project team is making substantial progress towards assessing process as well as product skills in word processing.

This is achieved in various ways but essentially all keystrokes are recorded for any assigned task. Thus the process by which a student achieves the product is known. The current version of the software package, called MacCATS, uses typically a window with a model document and another with the candidate's document which is required to be edited to the same form as the model. The model and candidate files include all the information about each character. An overall count of differences may be made and the product assessed. When it comes to process assessment it is possible to count the various keystrokes made and return comparative statistics using multiple correct solution paths. This process is (September 1994) in the early stages of implementation. One of the perceived problems is what they call "noise" and could be a typing error which is subsequently noted and corrected. The product is correct but the process affected by this noise. Sophisticated methods are being investigated to distinguish this noise from a process fault. The interested reader is strongly advised to read the paper by Dowsing et al (1995).

CAUSES OF MISCONCEPTIONS

One of the earliest projects visited was also to prove one of the most interesting. The project being undertaken at the Centre for Research into Learning and Instruction at the University of Edinburgh is entitled, "Identifying and advising students at risk from deficient study skills: a computer based package for departments". This was particularly appropriate as it starts one stage back from assessment of knowledge and understanding gained on a particular course. The objective is to test students to determine if they have weaknesses in a range of basic skills such as taking notes in lectures, using tutorials properly, labs etc. Unlike all the other projects visited most of the software has been written by a professional programmer. Three packages using HyperCard on the Macintosh are available and are appropriate for the whole range of subjects taught in first year at university.

The first is a set of cards constituting a questionnaire (a sheet of the questions is also available and the responses have then to be entered subsequently to the computer). This questionnaire is used with first year students after their first 5 weeks and is aimed at giving an early warning of problems and not waiting until the end of semester examinations. The questions are carefully designed as described by Entwistle and others (Entwistle & Ramsden, 1983 and Entwistle & Tait, 1990). As an aside,

it is important to note that it has been found that just filling in the questionnaire has the benefit of making students think and an important outcome is that students realise that they are not unique in having difficulties.

The second package takes the results of the questionnaires and produces an output called "Student View" for staff. This produces 3D representations of the class profile with respect to Deep, Surface and Strategic approaches to learning. This may be used to show all the students or a group or an individual. Information can be presented as 2D graphs. Students can also have entered comments and the lecturer can immediately observe class or individual difficulties and take appropriate action.

The third package is a HyperCard study skills based advisor called "Student Advisor". Each student can import their own survey results and get specific help. The Student Advisor has 400 cards with appropriate advice. Students can note selected cards for subsequent printing.

CONCLUSIONS

The use of computers in teaching, learning and assessment is sure to increase with the amount of funding being provided for the development of software. As pressure on education funding increases it seems inevitable that to a certain degree some teaching functions will be replaced by computers. The area that appears to have the greatest potential is that of assessment and particularly formative assessment utilising immediate feedback. This assessment should be designed to test for both process as well as product. In this respect the work at East Anglia is potentially very important.

Also it is important to avoid being short sighted and assess only after misunderstandings have been acquired. The work at Edinburgh, in that it assesses if study skills are adequate, is potentially very significant. We need to know our class profile near to the commencement of a course so that we may modify our teaching accordingly and provide help to students at risk.

The author has benefited greatly from the interactions with academics in the UK and is currently implementing formative assessment in first year engineering at the University of Western Australia.

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STUDENT INPUT AND TUTORIAL ORGANISATION

ABSTRACT

In this presentation I will discuss a technique for eliciting student ideas for tutorial organisation. While the technique itself is simple, I believe it is effective in generating new ideas and stimulating greater student participation.

INTRODUCTION

I would like to share a technique for tutorial organisation which I've found very useful. I am not claiming credit for originating this technique. I may well have gotten the idea for a previous Teaching-Learning Forum. But having practiced this technique in a couple of different courses I can certainly endorse it.

THE TECHNIQUE

The technique, I believe, should be used at the first meeting of a tutorial group after members have been introduced to one another. Each student is given an index card and asked to write one or more ideas on how the tutorials might be made more enjoyable and beneficial. Their ideas may relate to something they would like the instructor to do, or something they would like all the students to do. The ideas are contributed anonymously so that students do not feel inhibited in making suggestions.

Once everyone has had a chance to write their ideas, the cards are collected. Each idea is read out to the class for discussion. At this stage students can debate the pros and cons of each suggestion, and reach a consensus on whether they wish to adopt the suggestion. Only rarely, in my experience, do suggestions have to be put to a vote. I reserve the right to veto anything too outlandish, but so far I haven't had to exercise this.

Before the tutorial meets again, the instructor compiles a list of the accepted suggestions for distribution to all students. If necessary points can be refined at the second meeting, but otherwise the suggestions for tutorial organisation are immediately put into practice.

BENEFITS

This technique, it seems to me, offers a number of benefits to both instructors and students. First of all it generates new ideas. In the course I taught last semester, for example, one of the suggestions was for a weekly trivia quiz. I was a bit sceptical about the value of this, but it proved a good way of loosening people up at the beginning of each class as well as a way of reviewing the week's work. It was extremely popular with the students. A running tally was kept of individual scores, and the person with the highest score received a prize at the end of the semester.

Because the suggestions come from the students themselves, it provides an opportunity to try out ideas which might not work as well if imposed by the instructor. For instance, one class thought it

would be a good idea if they changed seats each week so that they would get to know a wider range of classmates. Frankly, I would have felt authoritarian telling students they had to change places each week, and they might well resent this. Since this was student initiated, however, it was happily implemented.

Although I don't have objective evidence to prove this, I believe allowing students the opportunity to contribute to tutorial organisation gives them a feeling of greater control over their learning. Especially with 2/3 year students, I've found that they often have quite definite ideas about what style of tutorial is most conducive to learning. Students do not always agree on this, but usually a compromise can be reached. In one case students were divided as to whether they should give formal presentations at tutorials. Rather than having one or two students give a paper at each session, it was decided to assign half a dozen people a focus question for each tutorial. This worked well, with some students commenting that they were the most useful tutorials of their university career.

Course evaluations suggest that allowing students a large say in the format for tutorials increased their degree of satisfaction with the classes. I believe students felt more committed to making the tutorials work and fostered a sense of group responsibility.

UCLES: A QUESTIONNAIRE FOR EVALUATING PORTFOLIO CULTURES IN POSTGRADUATE TEACHING

ABSTRACT

As a university teacher educator working in the field of science and mathematics education I am concerned with reforming the epistemology that underpins postgraduate university teaching. In this paper, I present an account of my current attempts to create a constructivist learning environment in one of my postgraduate classes, and describe a newly-developed questionnaire (UCLES) that I am using to evaluate the efficacy of my teaching reforms.

INTRODUCTION

Traditionally, universities have been exemplars of the *transmissionist paradigm* typified by large lecture theatres in which a single perspective has been dominant — the lecturer's (note the appropriateness of the title). In these forums, it is almost inevitable that knowledge is regarded as a commodity which, metaphorically speaking, can be transmitted from the lecturer's mind to the minds of the mass of students in attendance. Communicating (i.e. lecturing) serves the purpose of conveying seemingly objectified knowledge in as efficient way as possible. Consequently, learning is rendered as little more than the memorisation of uncontestable facts and, especially in science/ mathematics-related fields, the memorisation of standard problem types. This impoverished image of learning is reinforced by the predominance of the traditional practice of summative assessment. End-of-course examinations have the effect of isolating learning (i.e. the process of coming to know) from assessment (i.e. judging the quality of learning processes and outcomes) and generating in the minds of students an implicit belief in an external locus of control of learning.

Little wonder then that new postgraduate students bring with them historically-grounded expectations for more of the same — more lecturing, more examinations, more absorption of expert knowledge, more external control of learning. In this teaching and learning culture of consumption, the quality of the learning 'product' (i.e. students' knowledge) is judged by criteria established entirely by others (i.e. academic 'quality controllers'). Little opportunity exists for students to develop skills of judging the quality of their own learning, and less opportunity exists for students to learn how to generate criteria of quality.

As a university teacher, it is my concern that unless we reform the prevailing transmissionist epistemology of university teaching, our students will remain trapped in an unhealthy culture of uncritical, unreflective and reproductive thinking that is intellectually and emotionally disempowering. For me, the starting point for epistemological reform is my own postgraduate teaching in which I must model exemplary teaching practice to my postgraduate students who are, themselves, professional school teachers. It is no exaggeration to say that, left to their own devices, most of these mature-age students would readily re-adopt the passive and impoverished learning roles of their undergraduate years. Such is the power of enculturation and habituation.

CONSTRUCTIVISM: A REFERENT FOR TEACHING REFORM

Constructivism is an epistemology that asserts that knowledge is constructed (or developed) within the mind of the individual learner (von Glasersfeld, 1993). Of course, learners are inextricably linked with others by means of language and shared cultural assumptions and practices. So, constructivism accounts for the influence of the socio-cultural world by regarding it as both an important source of stimulation for the learner's sense-making process and a constraining influence on what counts as viable knowledge.

The press for basing my postgraduate teaching on a constructivist epistemology has arisen from a number of sources. Fifteen years of concerted research by science and mathematics educators worldwide has resulted in constructivism achieving an international status as the recognised alternative epistemology for curriculum reform of school science and mathematics (Tobin, 1993). During this period, constructivism also has come to serve as a powerful referent for framing questions that research addresses and ways that research is conducted. In the field of education, it has made research much more accessible as the metaphor of *research as learning* has been widely adopted by teachers (Denzin & Lincoln, 1994).

My own research has shown, however, how difficult it can be for well-intentioned and well-supported school teachers to create constructivist learning environments based only on 'cold' rational considerations of how to reform their teaching methods (Taylor, 1992, 1994). It seems to me that if teachers are to understand the rich implications of constructivism as a referent for the reform of teaching then they must be given opportunities to experience first-hand what it means to be a learner in a classroom environment framed by a constructivist epistemology. I am motivated, therefore, to provide opportunities in my own postgraduate classes for teachers to reflect on their own 'hot' experiences of their struggles to become empowered learners.

Principles of constructivist teaching

For my Curriculum class, which is a core Unit in our MSc(Science Education) program, the following constructivist principles serve as an epistemological framework for my design of teaching and learning activities. The descriptors in parentheses are related to the scales of the UCLES questionnaire whose role is explained later in the paper.

1. Knowledge is a *transformative growth process* shaped by the learner's sense of purpose, rather than a product to be absorbed from external sources (Reflexivity, Relevance, Management).
2. The teacher is a *craftsman and facilitator* of knowledge growth, rather than a disseminator, and modifies and adapts learning activities, rather than adheres rigidly to a prescribed curriculum (Accountability).
3. Students *interactively* construct their knowledge in social and cultural contexts (Negotiation).
4. The curriculum goals are concerned with *how* and *why* we know what we claim to know, and with knowledge growth and explanation (Reflexivity).

Organisation & structure of course

Each week, the class is divided into two two-hour sessions. In the first session, we discuss a chapter from the course text book, *Curriculum: Product or Praxis?* (Grundy, 1987). I chose this book because it provides a structured approach to the development of a constructivist perspective which can be used to challenge students' underlying epistemological assumptions. I find that it is essential for me to adopt (somewhat ironically) a central role in establishing a student-centred learning environment. This enables me to encourage students to participate in a discourse that is both 'open' and 'critical'. Open discourse involves self-disclosure of valued beliefs and assumptions, and requires a caring and sharing atmosphere. Critical discourse involves reflecting critically on one's own taken-for-granted beliefs and practices, particularly from an autobiographical perspective, and requires an atmosphere conducive to the critical self-examination of 'cherished icons' and 'holy cows'.

In the second session, students assemble in self-selected *special interest groups* (or *SIGs*) for the purpose of examining in detail a particular issue related to the overall theme of *curriculum*. Initially, I assist groups to form by suggesting a range of topics and then I 'kick start' each group by providing preliminary readings. Currently, the range of *SIGs* includes: Ethics, Technology, Culture, and Assessment. During the ensuing weeks, I impose on groups the requirement to submit in writing their emerging personal and negotiated group learning goals. During my visits to each *SIG*, I listen carefully, respond to questions, and stimulate thinking about the connection between the work of the *SIG* and the epistemological framework that is the subject of the first session. Each *SIG* is required to submit a report which is to be included in each student's individual portfolio for the purpose of formal course assessment.

Portfolio assessment

As a means of promoting a developmental model of student learning, I have adapted the *portfolio* approach to learning and assessment advocated by Duschl and Gittomar (1993). In a general sense, portfolios constitute a *culture* because they reconfigure a closer nexus amongst the trilogy of learning, assessment and teaching. In a more specific sense, they constitute a collection of samples of students' work that provides authentic and rich evidence for evaluating learning. As well as providing students with my own assessment criteria, I encourage them to develop their own criteria upon which to base self-evaluation of their own learning. In the course outline, I set out the following guidelines for students' portfolios.

A portfolio is a coherently organised collection of work completed during the semester and should provide evidence of: (1) your process of learning, especially changes in your understanding that result from critical self-reflective thinking; and (2) your understanding of selected key issues in the domain of curriculum that reflect your own learning goals. My assessment of your portfolio will be guided by your self-assessment report, and will be based on the following four criteria.

- Sound evidence of your learning during the course.
- Sound evidence of your understanding of substantive issues related to the domain of curriculum.
- Well-organised and coherent portfolio that is clearly focused and relevant to your professional interests.
- Critically insightful self-evaluation report, in narrative form, that serves as an advance organiser for reading your portfolio.

THE TEACHER RESEARCHER

As a teacher-researcher I am committed to evaluating the efficacy of my own teaching. This is not a new role for school teachers, especially those who are familiar with the well-established *action research* paradigm (Kemmis & McTaggart, 1988). However, in higher education the self-study of teaching is in its infancy, as evidenced by the recent establishment of a Special Interest Group of this title within the American Educational Research Association.

I have decided, therefore, to generate data that are useful for evaluating my attempts to transform the epistemology of my teaching of the Curriculum course. My experience as an *interpretive researcher* (Erickson, 1986) focusses my attention on the need for multiple sources of data. For this study, I draw on (1) students' portfolios, (2) student interviews, (3) my own reflections that I record

in a journal at the end of each class, and (4) a questionnaire designed to obtain measures of students' perceptions of key dimensions of the classroom learning environment (UCLES).

THE UNIVERSITY CONSTRUCTIVIST LEARNING ENVIRONMENT SURVEY

The University Constructivist Learning Environment Survey is a questionnaire designed for use in universities, particularly in postgraduate classrooms where constructivist epistemological reform is intended. It has arisen from research that combines the fields of *learning environment research* (Fraser, 1989) and constructivist research on teaching (Tobin, 1993). An earlier version of the questionnaire was designed for use in high school science and mathematics classrooms and has been found to be very useful for enabling teacher-researchers to evaluate epistemological transformations of their own classrooms (Taylor, Fraser & White, 1994; Taylor, Dawson & Fraser, 1995).

The UCLES comprises 30 statements arranged in five scales each of which focuses on a key aspect of a constructivist learning environment. The five scales are termed 'Relevance', 'Reflexivity', 'Accountability', 'Management', and 'Negotiation'. Table 1 presents scale descriptions and a sample item of each scale. The UCLES has a 5-point Likert-type frequency response scale which comprises the categories: *almost always* (5 points), *often* (4), *sometimes* (3), *seldom* (2), and *almost never* (1). Therefore, the maximum possible mean score of each 6-item scale is 30 and the minimum possible scale mean score is 6.

The UCLES is available in two forms.

- *Student Preferred Form.* This form of the questionnaire is useful for determining the extent to which students prefer to adopt the role of a learner in a constructivist classroom environment. A teacher can use this form to (1) assess students' initial conceptual readiness prior to introducing a portfolio culture and (2) gauge the extent to which students have come to accept the practices of a portfolio culture towards the end of the course.
- *Student Perceived Form.* This form asks students about their current learning roles and is useful for determining the extent to which students perceive the classroom environment to be engaging them in constructivist learning activities. A teacher can use this form to obtain insights into the efficacy of a newly-established portfolio culture by gauging students' perceptions toward the end of the course.

Table 1: UCLES Scales and Sample Items (Student Perceived)

Scale	Sample Item
	<i>In this class...</i>
Relevance: perceived relevance of learning to students' professional lives.	... what I learn is related to my professional life.
Reflexivity: perceived press for reflecting critically on established concepts, values and assumptions.	... I feel a need to examine critically my preconceptions.
Accountability: perceived legitimacy of holding the teacher accountable for learning opportunities.	... it's OK to question the way I'm being taught.
Management: perceived involvement in planning, conduct and assessment of learning.	... I have a role in planning what I learn.
Negotiation: perceived involvement with other students in assessing viability of new ideas.	... I ask other students to explain their ideas.

CONCLUSION

Because of the small size of my postgraduate classes ($N < 15$), I am using the UCLES as a heuristic device for exploring issues rather than as a psychometric instrument for measuring statistically changes in the learning environment. The UCLES provides a useful interpretive framework for examining students' perceptions and preferences, and enables me to construct not only a numerical profile of the whole group, but also provides a platform for constructing case studies of individual students.

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**FACILITATING THE LEARNING OF GROUP PROCESSES IN MANAGEMENT COURSES
VIA A GROUP-BASED, 'PARCEL-MARKING' STUDENT ASSESSMENT APPROACH:
EXPERIENCES TO DATE**

ABSTRACT

Many academics have used group-based student assessment (GBSA) in their respective programs at one time or another, for various reasons and presumably with varying degrees of success. Notwithstanding some caveats and shortcomings associated with this assessment mode, no discernible sign of a decline in its use is evident, either in its generic form or any one of several variations. This paper explains the rationale, identifies the objectives and describes the operations of a particular GBSA approach in management courses, where students, working in allocated study groups are handed back the percentage raw score for an assignment multiplied by the number of students comprising the particular group. Within a specified time period following this, the group is required to return a group-determined final distribution of individual scores to the lecturer after evaluating inter alia the extent to which each student has contributed to the overall assignment, and deciding on the level of reward to which each student is consequently entitled. Regardless of outcomes, students engage in debriefing sessions aimed at analysing their 'group processes', a topic with pivotal importance in organizational behaviour and other management-related courses. Learning is therefore grounded in the student's individual and collective experience.

The author's experience in using this approach to date will be discussed, including a summary of students' attitudes before and after the learning experience, their feedback on the process and lessons generally learned. The paper concludes with some suggestions for the more effective facilitation of student learning of group processes.

BACKGROUND

The use of student groups in educational settings for assessment is not new (Boyer, Weiner and Diamond, 1985). One way of classifying student assessment is on the basis of individual versus group-based assignments. It is thought that most academics will have at one time or another tried different forms of assessment between and within each of these two broad approaches. The reasons for using a particular form and the quality of its outcome will undoubtedly vary from person to person, and presumably even within any given individual from time to time.

Implicit in group-based student assessment (hereafter GBSA) is the notion of a cooperative learning environment, where students learn to collaborate and work together in mutually supportive ways towards a common goal (Johnson and Johnson, 1975; Johnson, Marayama, Johnson, Nelson and Skon, 1983). Despite a relatively steady and widespread advocacy for such a pedagogical environment, the reported experience of teachers and students in terms of learning outcomes and personal satisfaction have not been invariably positive (Linden, Nagao and Parsons, 1986).

From the students' perspective, two main types of negative experiences have been frequently reported in relation to GBSA: assessment or grading inequities ("some group members did not contribute as much as I did") and group process problems ("my group had members with difficult personalities").

What is GBSA? It is a way of evaluating a student's assignment performance on a *group* basis, as opposed to an individual-based approach. As one of two general approaches, the relatively widespread use of GBSA in the field of business and management can be explained by at least two general groups of reasons. Firstly, as higher educational resources continue to be squeezed, the general message in academe is to 'do more with less'. Individual-based student assessment while having many hallmarks of good pedagogical practice, is simply no longer economically justifiable if used exclusively, especially in courses with large student enrolments. GBSA offers an alternative approach; it complements the individual approach. Secondly, GBSA provides a basis for the cooperative approach in higher education, and all the values that it implies. Many have argued the educational merits associated with this collaborative stance (Johnson and Johnson, 1983; Johnson, Johnson and Maruyama, 1983; Sharan, 1980). Using only individual-based student assessment therefore deprives students and teachers of a potentially rich source of learning experience.

In its generic form, GBSA basically requires a large class to be sub-divided into several smaller groups, with say five or six students in each. A pre-determined group assignment (typically a large case-study or group project) is then distributed, which in turn is submitted, assessed and returned with one grade applicable to all group members. Although some may be tempted to argue that such an approach is objective, impartial and expedient, others would equally argue that it is overly task oriented with little or no facilitated learning for students, based on their personal and collective experiences.

Most students who have endured GBSA report a range of negative personal experiences, centered around issues like their expectations or preferences regarding a *modus operandi*, inferior communications and dysfunctional conflict (Jalajas and Sutton, 1985). Although many can end up positively hating any form of GBSA, this is unfortunate because of the ubiquity of work groups in professional life. Learning how to work effectively in groups is an important and real need.

As a result of dissatisfactions with the generic model by the late 1980s, the author attempted variations on the theme. While the approach can be named differently, the suggested one is the group-based, 'parcel marking' scheme (or simply 'parcel marking'). The general schema and flowchart is shown in Attachment One.

A key feature of 'parcel marking' is the issue of control over the distribution of the 'loot'. In conventional approaches, the group's overall grade is common for all its members, which can cause varying degrees of personal dissatisfaction especially if one has 'put-in' more than others, commonly referred to as 'passengers'. In parcel marking the group is required to share its total results (that is raw score multiplied by number of members) among all members by making decisions about *inter alia* who has contributed what, how much and how well. In so doing, not only are members learning about how to get things done in group settings, they are importantly learning about how fair or unfair, ethical or unethical reward systems can be, and what may have to be done to change attitudes, behaviour, or systems.

While convinced of the merits of a collaborative learning environment, an attempt was made to simultaneously address a key problem associated with the generic GBSA, and enhance the didactic aspects of the 'new' approach. Two primary reasons account for the interest in trying this approach, which in turn became its implicit objectives. Firstly, the felt need to counter the reported problem of grade inequity (Feichtner and Davis, 1985). In the parcel marking approach the locus of control resides with each group member. No longer need a member feel unfairly treated by 'the system' or powerless to influence a range of things that affect group performance. "What-you-get-will-depend-on-what-you-put-in-and-how-well-you-do-it" seems an appropriate catchphrase.

Secondly, a conviction that it is possible to facilitate the learning of 'group processes' via realtime personal experiences. This is a pivotal topic in courses like Organizational Behaviour and Management, which are normally mandatory in Business, Management, and Administration programs. The classroom assignment group becomes the working group, with real interpersonal dynamics and group processes. At a time when groups are increasingly becoming the norm in organizations, for example in the form of committees, project teams, quality circles, taskforces, work units, it is strongly argued that educators can make a contribution by facilitating students' learning of group skills. Examples of key learning areas covered are shown in Attachment Two. Thus it became not only possible but desirable for students to personally experience the range of emotions associated with working in groups to solve problems and make decisions (Fisher, 1981). This theory-praxis connection is considered to be educationally relevant.

While it is of course possible to incorporate similar learning in other GBSA, the parcel marking approach by its very nature extends the conventional boundaries by addressing potentially difficult but relevant issues like the relationship between personal effort, group performance, and influencing the reward system; communication styles, assertiveness and personality.

EXPERIENCES TO DATE

Initial trials were carried out with two groups of Bachelor of Applied Science (Advanced Nursing) students (N=20 and 25), divided into five-member strong groups and using very large and elaborate case-studies and oral presentations as assignments.

These were subsequently followed by three other groups: a Graduate Diploma in IR and HRM (N=22); a Bachelor of Business (HRM and IR) (N=32); and a MBA (N=27). Similar case-studies and oral presentations were used for the first two, and an extensive group project for the third.

On the basis of the relatively modest sample size of 24 groups (with approximately five students in each) that have participated in the parcel marking approach over the last five-six years, the feedback collected via post-assessment focus group interviews have been generally positive and supportive of the overall idea underlying parcel marking. Positive student comments far outweigh negative ones. Examples of positive comments are:

- "an unusual and unique method of assessment"
- "an opportunity to take charge of mine and others' contributions through the distribution of final scores"
- "feel like I have more control now and less like I'm a pawn"

Examples of negative comments are:

- "it's unfair to make us judge others' contribution to the group's work"
- "I just don't like playing judge and jury with my fellow-students"
- "it's really pitting one against the others and I don't like it at all"
- "I dislike working in a group why can't we have individual assignments?"

Before and after comparison of students' attitudes towards parcel marking were likewise generally between neutral to defensive, and generally between positive in a guarded sense to actively supportive, respectively.

The author's initial hypothesis that all parcel marking groups will adopt the 'easy way' out by simply averaging out the raw score (that is the instructor's grade will apply to all group members) was not found to be so. Of the 24 participating groups, seven ended up with 'non-averaged' final distribution of students' marks. Also relevant are the following additional qualitative impressions gathered by the author over several iterations of the parcel marking approach.

Firstly, if sufficient care is taken before, during and after the formal assessment process, much quality learning of group processes can result for students and at the same time provide a GBSA experience that overcomes the grade inequity problem. The debriefing or 'after' phase is particularly prone to a superficial treatment, and the instructor should be skilled in group facilitation to be able to make relevant and meaningful connections between the disparate experiences and comments of students. Additionally, groups would benefit from an analysis of its stages of development in relation to its group assignment. Suitable models would include Tuckman, 1965; and Forsyth, 1983. Good inductive learning can occur during this debriefing phase if the psychological climate has been suitably orchestrated.

Secondly, a 'maturity factor' seems to be operating in this GBSA approach. Older, typically part-time, post-experience participants, but independent of student status (that is undergraduate or postgraduate), seem more willing and ready to participate in a *prima facie* more serious manner. This mindset has typically produced very useful awareness raising experiences, with students making powerful comparisons and drawing parallels between what has happened in their parcel marking groups and actual group situations in their respective organizations. In many cases it has been a confirmatory experience, in others a revelatory one. In all cases, a key question is what needs to be attempted in future to improve individual performance within a group setting; what has been learned?. Conversely, younger, less experienced and typically full-time students tend to go through the requirements of this approach in a more mechanistic fashion. The quality of the post-assessment learning is thought to be sub-optimal, and therefore more educationally challenging.

Thirdly, attention needs to be given to the way individuals are allocated into groups. Although the choice is basically between three generic methods: self-selection, random, or systematic, it is possible to create hybrids (Linden, Nagao and Parsons, 1986).

Fourthly, the instructor needs to ensure against blatant victimisation of any individual student. Should this occur there is a real need to intervene and help the group make its decision.

Although this has been a fruitful attempt at facilitating the learning group processes and at overcoming the GBSA grade inequity problem, the author's cumulative experience has raised additional questions with implications for future research.

Firstly, at a time when the number of full-fee paying foreign students in local universities, and the number of off-shore programs of Australian universities appear to be increasing steadily, what are the cross-cultural implications, if any, of the parcel marking approach? What meaning does a cooperative learning environment have for students from cultures quite different from Australia? From the author's experience, many students from some overseas countries manifest the discrepancy between what is *said*, what is *felt* and what is overtly *displayed* in ways not all of which are congruent or functional.

Secondly, are there any, and if so what, differences between male and female students in handling group processes in parcel marking assignments? What lessons can males and females learn from such gender differences?

Thirdly, with more work on the maturity factor, how can the less experienced, typically full-time students be better helped to optimise learning of group processes?

Clearly more work needs to be done if this approach is to continue to realise its twin objectives of addressing the grade inequity problem commonly associated with GBSA and facilitating students' learning of group processes.

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A GROUP-BASED, 'PARCEL MARKING' APPROACH: THE GENERAL SCHEMA AND FLOWCHART

(1) INSTRUCTOR DECIDES ON A SUITABLE GROUP ASSIGNMENT (EG CASE-STUDY, GROUP PROJECT)

(2) ALLOCATION OF STUDENTS INTO GROUPS (ALLOCATION METHOD TO BE CAREFULLY SELECTED)

(2A - OPTIONAL) LECTURE ON WORKING IN GROUPS; GROUP DEVELOPMENT STAGES; GROUP DYNAMICS AND PROCESSES

(3) ASSIGNMENT DISTRIBUTED; GROUPS COMMENCE WORK

(4) GROUPS SUBMIT ASSIGNMENT ON DUE DATE

(5) INSTRUCTOR ASSESSES AND GRADES GROUP ASSIGNMENT

(6) INSTRUCTOR RETURNS GRADED ASSIGNMENT TO EACH GROUP WITH A 'PARCEL MARK' (WHICH IS THE RAW SCORE MULTIPLIED BY NUMBER OF GROUP MEMBERS)

(7) GROUP HAS UP TO 48 HOURS TO DECIDE ON THE FINAL DISTRIBUTION OF MARKS FOR ALL GROUP MEMBERS

(8) INSTRUCTOR RECEIVES FINAL DISTRIBUTION FROM ALL GROUPS

(9) INSTRUCTOR CONVENES A DEBRIEFING SESSION FOR EACH GROUP TO FACILITATE LEARNING CONVERSATIONS ON GROUP PROCESSES: WHAT WORKED AND WHAT DIDN'T?; WHAT WENT WRONG?; HOW CAN WE IMPROVE IN FUTURE?; WHAT HAVE WE LEARNED ABOUT OURSELVES, OTHERS AND GROUP PROCESSES?

(10) AN ATTEMPT AT INTERNALISING THE EXPERIENCE FOR ALL PARTIES (INDUCTIVE LEARNING)

(11) START OF NEXT CYCLE (IF APPROPRIATE)

SOME EXAMPLES OF MAJOR LEARNING AREAS (VIZ KNOWLEDGE, SKILLS, ATTITUDES) CONSIDERED RELEVANT IN THE GROUP-BASED, 'PARCEL-MARKING' APPROACH *:

COMMUNICATION

TASK (INCLUDING PROBLEM-SOLVING AND DECISION-MAKING), MAINTENANCE, AND DYSFUNCTIONAL BEHAVIOURS

CONTENT VS PROCESS

GROUP FACILITATION

MEETING MANAGEMENT

CONFLICT MANAGEMENT AND RESOLUTION

NEGOTIATIONS

POLITICAL PROCESSES

INFLUENCE

LEADERSHIP

DELEGATION

ASSERTIVENESS

PERFORMANCE MANAGEMENT

REWARD SYSTEMS

OPERANT CONDITIONING

COLLABORATION VS COMPETITION

LEARNING-TO-LEARN

*** These subsume intra-personal (eg perception, motivation, stress and other personality-related variables) and inter-personal processes.(eg communications).**

A COMPARISON OF SEVERAL SURVEY TECHNIQUES TO OBTAIN STUDENT EVALUATION OF A UNIT IN LAND MANAGEMENT

ABSTRACT

Student feedback techniques appear ad hoc, to be serving purposes related to particular interests of the course coordinator. While this may be the prerogative of the course coordinator, we were aware of a diverse range of approaches used in feedback questionnaires. We have considered whether there might be more effective approaches than single item responses on individual questions that tend to dominate the more usual feedback questionnaires. This paper summarises results from two questionnaires, examining issues of custom design of questionnaires and interpreting correlations among groups of item responses that arose in undertaking several different feedback techniques on a student group. Feedback from a context-designed conjoint survey was considered the most valuable for course implementation..

INTRODUCTION

Most attempts to improve the nature of a tertiary course through student evaluation and feedback simply identify what is believed to be an appropriate questionnaire and then run this on the class of students (or a representative sub-group). This approach assumes that the staff member(s) associated with the course have a fairly good understanding of the nature of problems in their course, and how the student group will respond to such issues in their survey. It further assumes that those administering the survey know enough about the appropriate framing of questions, the reliability of their survey techniques and the appropriate ways to interpret the responses to obtain a relevant and actionable set of recommendations.

A program of comparisons between different surveys in the one unit would provide greater understanding of both the opinions of the respondents and the effectiveness of the feedback gathering instruments. Much as the old truism says: "To get the right answer, first ask the right question!" Literature resources on survey techniques are quite abundant. However, close comparison between different survey techniques are rare. It appears quite likely that the perception of course-work and content implied in a questionnaire drive the development of the respondents' opinions. In other words, our specific questions may be leading our witnesses.

As part of a program of renovation of laboratory education within the school of BES, an initiative was planned involving the identification of effective and valid survey instruments. This was carried out through a program of several questionnaires. The outcomes of this exercise were framed in terms of trying to identify design features of effective surveys and selection of an optimum approach to improvement through these. However, to make some simple recommendation identifying a single best approach is beyond reasonable expectations: not only does the intended use of survey instruments vary, but the interpretive needs of those who use them also varies. The most clearly distinguished cases of the latter are those situations where a survey is required for needs relating to staff promotion as distinct from student learning. While some may argue that these should be the same, there are many cases where two separate evaluation purposes are accepted within a profession. In our current context, this paper will highlight features of interest in terms of validly tapping the students' needs.

QUESTIONNAIRES

Murdoch Questionnaire

The Murdoch questionnaire was run on two occasions, in slightly different forms. In the context of unit reviews, a full questionnaire to students had been devised by the Murdoch Academic Services Unit (ASU) personnel to explore many aspects of a unit under topics of organisation, content, assessment, resources, staff, lectures, laboratories, and overall issues. The questionnaire allows responses over a scale of four responses, from strongly disagree to strongly agree, as well as being unable to judge. Cases where 30% or more of respondents disagree or strongly disagree are considered a problem area in the delivery of the unit, where course coordinators should make improvements.

The full questionnaire, some 58 separate items, was given to the entire land management class during a normal lecture period. A second group of 24 questions that specifically related to laboratory teaching was undertaken by a group of tutorial students on a separate occasion. Some 11 questions were common to both surveys. The intention of this exercise was firstly to examine the repeatability of the questionnaire in terms of the responses on the 11 common questions, secondly to examine (or demonstrate) the continual problem that a structured questionnaire might overlook further issue(s), and thirdly, to examine the questionnaire in the fundamental role of diagnosis of unit defects. The problem in scope mentioned as the second interest is a hindrance moving from the interpretation of the results of a questionnaire study to the decision to invest resources into dealing with the issues identified.

The repeatability of the questionnaire was examined by comparing the distribution of responses on the 11 replicated questions using the Kolmogorov-Smirnov two-sample tests, and comparing the percentage distributions (Table 1). The results found that cumulative distributions generally did not differ between the two groups, but that the interpretative benchmark of 30% respondents disagreeing did vary frequently.

Table 1. Kolmogorov-Smirnov (K-S) two-sample test for significantly differing distributions in the cumulated responses to 11 questions common to the two Murdoch studies.

The general absence of low probabilities (no $P < 0.05$) indicates acceptance of a null hypothesis that the distribution of responses were basically the same on both occasions. The percentage distribution does not show 'unable to judge' response levels. The 30% rule refers to the ASU recommendation that educators make improvements where more than 30% of respondents give either Disagree or Strongly Disagree as their responses. Variations in this between the two studies are marked \square .

Studies are marked L.														
No of Question*	No Respondents		K - S	2 ² tailed P	% Distribution				% Distribution				Variation in 30% Rule	
	ASU survey	Tutorial			ASU survey				Tutorial					
					SA	A	D	SD	SA	A	D	SD		
47. Explanations	63	18	1.336	0.056	3	42	38	12	10	68	16	0	□	
48. Encourage	64	19	0.554	0.919	9	64	20	4	10	79	10	0		
49. Interested	63	17	0.536	0.936	11	65	17	3	16	42	26	5	□	
50. Organised	63	19	0.243	1.000	6	62	23	4	0	68	21	10	□	
51. Responses	59	18	0.643	0.802	8	58	24	0	5	47	42	0	□	
52. Comments	57	19	0.397	0.997	1	38	38	9	10	42	26	21		
53. Reasonable time	60	18	1.137	0.151	24	44	14	9	0	42	31	21	□	
54. Ratio	63	18	0.802	0.541	1	77	15	1	6	56	33	6	□	
55. Stimulating	64	18	1.249	0.088	9	39	39	9	11	72	6	11	□	
56. Relevant	60	17	0.371	0.999	9	70	11	1	6	71	18	6		
57. Writeup OK	63	17	0.939	0.371	26	23	18	29	29	47	6	18	□	

Spearman rank correlation analysis identified many responses in the Murdoch questionnaire that were clearly linked issues in the respondents perceptions (data not shown). These indicated some clear behavioural traits and expectations of the students, and provided considerable guidance to unit improvement. An outline of some of these follows.

If the students were in agreement that the aims of the unit were clearly stated at the beginning (Qn 1), they also tended to consider that these aims were achieved (Qn 2). In the context of this unit, this may simply identify those students who have effectively read the introduction of the Study Guide.

Quality is a diffuse, but functional, term. When the students tended to feel that the unit was well organised (Qn 3), that the unit's teaching sessions were appropriate to the unit (Qn 4), or that the unit did not attempt to cover too much material (Qn 7), they also reported being satisfied with the quality of the unit (Qn 25). In fact, responses on Qn 25 on the quality of the unit was positively and significantly correlated with 22 of the 58 questions used overall, including all of the first 11 questions, and the two questions examining the quality of the lectures (Qn 46) and the quality of the laboratories (Qn 58). In a similar fashion, Qn 46 was correlated with 33 other questions, including 16 of the 21 examining aspects of lecturing. Question 58 was correlated with 16 questions, including 9 of the last 12 which were on the laboratory sessions. The interpretations made on the basis of questions using the term quality may not be very specific in guiding improvements.

Several cases of negative correlations between responses on different questions were observed and deserve note. The existence of these cases suggests that the optimisation process may never be perfect, but can only satisfy a majority of individuals needs. In the ASU survey, there were seven cases of significant ($P < 0.05$) negative correlations. The workload being reasonable (Qn 6) was negatively associated with the lecturer indicating enough suitable references (Qn 35). The lectures aiding understanding (Qn 8) was negatively associated with the lecturer encouraging student questions (Qn 33). The staff being accessible outside of classes (Qn 22) was negatively associated with lab classes having a satisfactory staff:student ratio (Qn 54). The lecturer being well organised (Qn 26) was negatively associated with enough examples being given during lectures (Qn 44). The study guide setting out the unit requirements clearly was negatively associated with the demonstrator encouraging the student to think (Qn 48). The response that the lecturer writes clearly (Qn 29) was negatively associated with the demonstrator encouraging the student to think (Qn 48). The response that the lecturer presents difficult concepts clearly (Qn 31) was negatively correlated with the being satisfied with the quality of the laboratory sessions (Qn 58).

Further negative correlations were observed when the expanded laboratory questionnaire was used. There were five statistically significant ($P < 0.05$) examples of these, as follows: A response that the demonstrator was interested in students (Qn 4) was negatively correlated with both responses on there being a satisfactory staff:student ratio (Qn 9) and there being clear links with theory (Qn 22). A response that there was adequate equipment (Qn 11) was negatively correlated with a response that the aims of the laboratories were clearly stated (Qn 21). The latter response was also negatively correlated with responses on the presence of enough space in the laboratories (Qn 15). The responses on space in the laboratories (Qn 15) were negatively correlated with responses on there being an opportunity to discuss the practical work in class time (Qn 23). The last three of these correlations suggest that the learning in laboratories is being influenced by queueing. We suggest that where students were obliged to queue for equipment, they will tend to read the study guide further and discuss the laboratory exercises with colleagues and demonstrators.

Conjoint Analysis

Conjoint analysis seeks to obtain an insight into the relative importance of different aspects of a service or product that might be modified in an effort to improve customer acceptance or 'utility'. It does this by asking the respondent to choose between different combinations of the differing aspects or 'attributes' (Green and Wind, 1975). While this technique has only been used occasionally on education services (Walker, Winzar and Johnson, 1991; Carter, 1993), it has been widely used in the commercial services field (Greene and Nkong, 1989).

In the current study, as in Carter (1993), the relevance (or Salience in the terminology of Carter) of the analysis to the individual students was enhanced by focussing a discussion with the tutorial group on those aspects of a unit that they most liked. In the context of the land management unit, this basically identified five main areas of concern (Content Workload, Flexibility, Student

Organisation, Assessment, and Feedback). A set of different levels of unit attributes in these areas was devised (Table 2). A set of hypothetical units with a wide range of combinations of each of the attributes was then devised from these (not shown). At a subsequent tutorial, the students were presented with a set of the hypothetical units, with each unit outlined just in terms of the five attributes, and each printed on an individual slip of paper. The students were each asked to consider these as possible formats of the land management unit, to assemble the slips in their order of preference, and to rate each of them.

The results of this study are summarised in Table 3, wherein the term 'Importance' indicates the overall effect of the utility of an attribute on the model, relative to that observed over all attributes. The overall Utility (U) of a hypothetical unit may be estimated using a model as follows:

$$U = \sum_{i=1}^5 B_i \text{ (Factor Level)} + \text{CONSTANT}$$

over all five attributes, with a Pearson R value of 0.974. Some bias in the estimates of B may be expected from the assumption of linearity of utility over the three levels of attributes.

The results suggest that flexibility in the unit delivery was more important than its workload (Table 3). This is an unexpected outcome in that workload was often the major focus of discussions on the unit. The options that were responsible for the improvement in utility due to course flexibility appear to be the prospect of lecture repeats and videotaping, and frequent laboratory timeslots. This appears to be more suitable in modern student lifestyles.

Table 2 Unit Attributes and three Factor levels of these used for Conjoint Study.

<i>Content Workload</i>	
1	Substantial theory workload requiring intensive reading and considerable understanding of concepts from prerequisite courses, many new concepts in each lecture.
2	Moderate theory workload with around three hours of reading from two prescribed texts each week, with several new concepts involved each week.
3	Light theory workload focussing on simple, popular and broad concepts and exploring these in some depth, but no reading necessary outside of a 120 page text.
<i>Flexibility</i>	
1	Lectures, labs and tutorials at one time only, never repeated and no library tapes of lectures. Sometimes a penalty for missing scheduled activities.
2	Lecture at one time only, but taped and always available in closed reserve. Lab classes scheduled only on two teaching weekday afternoons.
3	A repeat of all lectures in a convenient evening time slot, with video tapes of lectures and copies of overheads available. Labs and tutorials both in mornings and afternoons, with five scheduled times.
<i>Student Organisation</i>	
1	Laboratory projects are due within three days of the lab but require around 5 hours of group work (your groups are of 4 members) to prepare a group report.
2	Laboratory projects prepared in varying ways, some by groups and some individually, always due within seven days of the lab.
3	Laboratory projects all prepared individually, and are required within two weeks of the lab.
<i>Assessment</i>	
1	Assessment during semester requires extensive reasoning and deduction, in-depth knowledge is expected in substantial (>1500 words/four pages) assignments.
2	Assessment during semester requires searches through reference materials and reader, but only single paragraph answers required.
3	Assessment during semester based on sets of 12 short answers: not essays, workings or explanations required.
<i>Feedback</i>	
1	No results on any assignments during semester (worth 50% of total grade) until after the final exam.
2	Some assignments (25% of final grade) during semester are returned, but around 25% of final grade in unreturned assignments at exam time.
3	All assignments (50% of total grade) marked within 2 weeks of submission and returned by week 11, usually with over 20 words of comments.

a SERVQUAL type of questionnaire, which was also undertaken, but has not been discussed here because of space limitations.

The conjoint analysis feedback is strongly 'customised' through a sequence of two interaction sessions with the study group. The initial session obtained their opinions as to what would improve the unit for them as individuals. This exercise generated a set of attributes for which a series of steps or service levels were devised by the investigator. These steps were assembled into different unit formats, trading off a more attractive level in one attribute with a worse level in another. In the second session, the respondents examined a set of hypothetical units and decided which would be most preferable to them. The hypothetical units were to be in Land Management, and it would not be appropriate to interpretate the data as applying to any University unit.

To illustrate this process, the most attractive of all the units offered was one set taking in levels 2 of Workload, 3 of Flexibility, 2 of Student Organisation, 1 of Assessment, and 3 of Feedback (Table 2). It was the top choice of over 50% of respondents, and to summarise the levels from Table 2, it had the following overall set of attributes:

Unit R
Moderate theory workload with around three hours of reading from two prescribed texts each week, with several new concepts involved each week.
A repeat of all lectures in a convenient evening time slot, with video tapes of lectures and copies of overheads available. Labs and tutorials available both in mornings and afternoons, with five scheduled times.
Laboratory projects prepared in varying ways, some by groups and some individually, always due within seven days of the lab.
Assessment during semester requires extensive reasoning and deduction, in-depth knowledge is expected in substantial (> 1500 words/four pages) assignments.
All assignments (50% of total grade) marked within 2 weeks of submission and returned by week 11, usually with over 20 words of comments.

Inspection of these attributes recognises a service level that is a step above that currently enjoyed by Land Management students, and it must be admitted that options such as morning laboratories, evening lectures, and all assignments returned by week 11 might be beyond available human resources. In our own response to this, we have increased flexibility in another (less expensive) way, in allowing internal students to undertake the laboratories in the laboratory week that external students undertake on-campus. Video-taped material related to the unit has been expanded.

One major strength of conjoint analysis lies in the importance it attaches to different attributes, where importance directly reflects the relative utility that each contributes in the students preferences. We know that a dollar invested in the flexibility area is worth more than one invested in other areas, and how much more in proportion. A second strength lies in the prescriptive nature of the set of attribute steps generated by the initial session's feedback. This allows the investigator to be more certain about the nature of changes mandated by the second session's feedback.

The major defect of conjoint analysis is that it may not allow access to a widely applied mechanistic model of the education service. Such a model would be an ideal tool if it was universally applicable to all units, and responses to questions in a standard questionnaire could be accumulated to give scores for appropriate components of the model. This would also serve needs in staff development and promotion, and we suggest that diverse feedback methods will remain for such varied agendas.

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LEARNING STYLES - GREAT MINDS DON'T THINK ALIKE!

ABSTRACT

The presenter of this workshop has taught for the past 14 years in secondary, TAFE and university. She has a BEd, GradDipAcctg, MBus and is a qualified accountant. It was not until she undertook postgraduate studies of her own that a greater awareness of how students learn became of paramount importance. This workshop is an investigation of the learning style concept of the Dunn model as it applies to how university educators can teach students to learn more effectively through their individual learning styles. The instrument that is used to identify student learning style preferences is the Productivity Environmental Preference Survey (PEPS). Other activities will include studying strategies based on learning styles, teaching to students learning styles, creating a multi-sensory lecture/tutorial, encouraging creativity and small group learning strategies. This workshop will include elements of theoretical, technical and practical applications educators can immediately use in their particular areas of teaching. Educators should be able to respond to student needs by planning and creating educational settings that enhance and support students' unique learning style characteristics.

This workshop paper is designed for those educators who

☞ like to take away a set of notes from a professional development seminar

☞ need to see something in writing to come back to later on

☞ need a hard copy of what they have learned.

INTRODUCTION

Students learn in a variety of different ways. Although research in this area is extensive, as practising tutors and lecturers we often do not have the opportunity to investigate the research findings, concentrating only on our specific subject materials. But the work of such people as Gregorc, Kolb, McCarthy, and Dunn and Dunn has opened up the world of educational research on learning styles and made it user friendly. This workshop deals with the work of Dr Rita Dunn from St John's University in New York and Dr Ken Dunn of Queen's College in New York. They are leading American educators in the area of learning styles. (Whitefield, 1993)

THE DUNN AND DUNN MODEL

The Dunn and Dunn model is one of a number on learning styles. It identifies five major stimuli to which students respond in learning situations - environmental, emotional, sociological, physical, and psychological. The Dunn model identifies conditions external to the learner, rather than factors that affect a persons ability to manipulate information. These factors affect the external instructional conditions rather than learning strategies internal to the learner (Jonassen and Grabowski, 1993).

The following is a very brief description of the elements under each stimuli adapted from Teaching Students To Read Through Their Individual Learning Styles, Carbo, Dunn and Dunn, 1991.

Environmental Stimuli: student reactions to the stimuli are determined by their biological makeup and therefore cannot change their hearing, sight, temperature or body sensitivities.

Emotional Stimuli: students emotional elements appear to be developmental i.e. they emerge over time through experiences at home, school, playground, on trips etc.

Sociological Stimuli: students sociological preferences relate to whether students like to learn alone or in a group and whether studying in a variety of ways helps them to learn the given information.

Physical Stimuli: Students physical elements are biological in nature and relate to how people learn through their senses i.e. auditory, visual, tactual and kinesthetic preferences.

Psychological Stimuli: The differences in brain functioning are what contribute to individual learning style differences among different people; it is suggested that learning is better accomplished for different people through different approaches.¹

The following table gives a summary of the characteristics of global/analytic persons.(Whitefield, 1994)

Table 1

GLOBAL VS ANALYTIC	
Some terms used in educational literature:	
<u>Analytic</u>	- <u>Global</u>
Left	- Right
Sequential	- Simultaneous
Inductive	- Deductive
<u>Analytics</u>	
<ul style="list-style-type: none"> - learn step by step - cumulative sequential pattern building towards a concept - prefer quiet, well lit, formal design - have a strong need to complete the task they are working on - respond well to words and numbers - need visual re-inforcement - give directions, fact sheets, underline important sections - provide feedback on details - in sequence 	
<u>Globals</u>	
<ul style="list-style-type: none"> - learn the concepts first - then concentrate on details - like to be introduced to information with humour and colour - can work with distractors - take frequent breaks - work on several tasks simultaneously - most gifted children are global - need lessons that are interesting to them - discover through group learning (small group techniques) - need written and tactual involvement - respond well to pictures 	

CLUES TO RECOGNIZING ANALYTICS/GLOBALS

ANALYTICS

Should I use a pen or pencil
Is this on the test
When is this due in
Can I have more time
What do you want me to do first
Can you check my work please
Is this how you do it

GLOBALS

Why are we doing this
Not now, I'll do it later
I need a break
I'll come back to this later
I can't work when it's quiet

ON THE PEPS

There are five elements of learning style on the PEPS that indicate whether a person has analytic and/or global processing tendencies.

ANALYTIC

- 1) Quiet
- 2) Bright
- 4) Formal
- 6) High
- 16) Low

NOISE

LIGHT

DESIGN

PERSISTENCE

INTAKE

GLOBAL

- Sound present
Dim
Informal
Low
High

If you score 5 in one category, you are either highly G or highly A

If you score 4, you are either very G or very A

If you score 3, you are either mostly G or mostly A

Some people have a mixture of Global and Analytic processing.

We are all different. We do things differently!

Guidelines for teaching GLOBAL students

① Introducing the material

Start the lesson with a story, an anecdote or humour that relates to the content. If possible, have it relate to the students own experiences, or something that is realistic to them.

② Discovery through group learning.

Avoid telling too many facts. Students are to discover these in small groups. Some techniques may be Circle of knowledge, Team learning, Brainstorming, Case study, etc.

③ Written and tactual involvement.

Globals love to graph, map, illustrate, draw, role play, create charts, invent games, make things, etc. Then watch them develop teaching skills when they have to teach to other students. This happens a lot with computers.

Guidelines for teaching ANALYTIC students

① Explanations and visual reinforcement

Analytics respond to key words and numbers. Write these on the board as you go. Answer questions about details directly, and use printed visuals such as the board and overheads.

② Directions

List all relevant information about assignments, work requirements, objectives and directions on paper, or have the students copy from the board.

Don't tell them, *show* them.

③ Step by step

Proceed step by step through the details that need to be absorbed in order to acquire skills. Put key words on the board, underline important sections or use highlighters, check homework daily, teach independent use of the library facilities, etc

④ Testing and feedback.

Provide instant feedback on tests and assignments (as soon as possible), and do what you say you will do! Analytics hold you to your word.

.....
Please note the more traditional methods of teaching are in the analytic part of this. Most teachers are analytical in nature (about 80%) yet only 45% of students are analytical in the early part of high school and become more analytic as they enter university.

INSTRUMENT FOR MEASURING DUNN AND DUNN LEARNING STYLES

Four instruments have been developed to measure learning styles by Dunn, Dunn and Price. Specific to this workshop, the *Productivity Environmental Preference Survey* (PEPS) is used. The PEPS uses self-reporting methods to measure preferences. It is a 100-item test which measures 20 factors using a 5 point Likert scale. The reliability results reported by the authors were greater than .60 for 68% of the test-retest reliabilities for the 20 factors (Jonassen and Grabowski, 1993). Students can also be given a printed interpretation of their preferences and suggestions to studying techniques (Dunn and Ingham, 1990).

CREATING AN ENVIRONMENT FOR STUDENT STUDY

By making students aware of their optimal learning preferences and helping them understand how to exploit their strengths and develop their non preferred styles, studying and learning ought to be more productive.

TEACHING STYLE

Think about your teaching style! When tutoring/lecturing, what style do you use more frequently: Do you present information in a way which suits your preferences or do you present in such a way that suits most of your students? Consideration must be given on the impact your teaching style has on student motivation and learning.

How do you as a lecturer present information to students in their preferred learning style mode? **It's difficult! This is the challenge!**

What do you do in the lecture? ● Are you a talker? This will benefit auditory students (only 30 per cent of students will remember 75 per cent of what you talk about in class). ● Do you write on the board, use overhead projectors, and have students read from their texts/handouts? Do you use colour when writing on the board? This will assist students with visual preferences (only 40 per cent of students will remember 75 per cents of what they read in class).

CREATING MULTISENSORY LECTURE/TUTORIAL - SOME IDEAS

1. Props/Telling Stories This technique is used to focus the learners attention on an object or a story they can associate with but relating back to the content of the lecture/tutorial/workshop/class..

2. Interactive Computer This is a redesigned Mac Plus. Apart from finding a computer screen shell, the insides are very simple to make. It can also be done with a milk carton. When students come in for consultations they can go to a folder and 'test' themselves on the topic. As an exercise/tutorial students could write up questions/answers on task cards, these can be bundled together, then each student can come up to the computer and feed the cards in. The idea is for the student to think of the answer before feeding the card through. A novel way of **you** getting a self test written by students, but can be used in future classes.

2. Celebrity Head The now world famous game, but used in any university classroom. A colleague did this at the end of teaching about accounting financial ratios. He would write a ratio on a card, then select a student to wear the headband, and try to guess the ratio in 5 or fewer guesses. This concept can be used in almost any topic, but don't overdo it. Nice and simple at the end of a topic, limited only by your imagination. Remember to keep all the inserts!

3. Pic A Hole A simple item you can make one of, and have students make other packets. Then have them come up with multiple choice questions. Once the packets are made, and you have a class set, the students must really know their work if they get questions and answers correct on the cards.

4. Electro boards A simple idea that lends itself to using technology without a computer! Making electro boards is easy. Finding the continuity tester is the hard part.

5. Others: Role Plays, Case Studies, External visits

CONCLUSION

The techniques demonstrated and written about here are not new. Educators have been using them for years. Unfortunately, the further we go up the educational ladder, the fun seems to disappear out of teaching and learning. When did your 2nd year university class last do a role play, play celebrity head, or go on an excursion? When did you as a lecturer or tutor bring in props to help explain a concept, use humour, or tell a story to get a point across? What is new is *knowing* about *how* students learn and making them aware of how to learn and study more effectively.

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FOOTNOTE

- 1 Within the overall model the global/analytical element is the most extensively researched cognitive control. Research began over 40 years ago, and it remains the most prescriptive of learning and instructional outcomes. Those with a global cognitive preference are highly influenced by the entire perceptual field. They see the forest rather than the trees. Those with an analytic cognitive preference try to understand the perceived field (Jonassen and Grabowski, 1993). They see the trees in the forest. Most of us fall somewhere between these two extremes.

TEACHING PORTFOLIOS - WHAT ARE THEY AND HOW DO I CREATE ONE?

ABSTRACT

With the current Australian focus on quality teaching many universities are asking for detailed teaching portfolios to be presented for appointment, promotion and tenure. While there are longstanding conventions on how to present academic qualifications, research and publications, teaching portfolios are relatively new.

A teaching portfolio is a summary of your major teaching activities and accomplishments. It describes documents and materials which collectively suggest the scope and quality of your teaching.

Sources of information that assist with the preparation of teaching portfolios will be highlighted and their suggestions explored. Available for viewing will be a selection of exemplary teaching portfolios used in successful promotion applications. As well, the University of Western Australia's booklet "A guide to Teaching Portfolios and their Role in Promotion" will be distributed.

CREATING A TEACHING PORTFOLIO

A teaching portfolio is a summary of your major teaching activities and accomplishments. It describes documents and materials which collectively suggest the scope and quality of your teaching. It can be likened to the portfolios of work collected by other professionals such as artists, photographers and architects. There are a variety of reasons for compiling a teaching portfolio some of which are listed in Table 1 below.

Table 1: Reasons for maintaining a teaching portfolio

<p>Evidence in applications for grants, appointments, tenure, promotion, or consultancies</p>
<p>Teaching performance is assuming an increasing importance in all these areas. Applicants are now expected to produce evidence about their academic teaching accomplishments.</p>
<p>Self-evaluation, reflection and improvement</p>
<p>A teaching portfolio will provide you with an invaluable record of your work as a teacher and thereby assist you in planning your future development.</p>
<p>Planning for Staff Development Review discussions</p>
<p>A portfolio helps you prepare for the once every two year staff development review-planning discussions that were recently implemented at The University of Western Australia.</p>
<p>Fostering discussion about teaching</p>
<p>Keeping a portfolio and encouraging others to do so creates an environment where discussion of teaching practices becomes the norm.</p>
<p>Evidence of work quality</p>
<p>In these days of increasing accountability there may be occasions where the quality of your work is challenged. Documentary evidence contained in your portfolio may prove invaluable to defending your case.</p>

Don't wait until you need to present or refer to your teaching activities to prepare a portfolio. It is wise to collect information on a continual basis. Preparing a detailed portfolio can be difficult in a short time, and certain items may be hard to get at the last moment, e.g. student ratings. It is also easy to forget details of past efforts and aspects of your professional development that have become part of your current practice. By collecting material over time you will have a wide selection of information from which to choose when presenting a teaching portfolio.

In creating your portfolio you may choose to keep all your information on a work processor, or in a file or a box. The material can be edited at some time later, but it provides the basis from which you can select when you wish to present evidence to some external audience. It may not be appropriate that the portfolio be submitted in its entirety, but rather you should extract information relevant to your target audience. It is important to bear in mind that the purpose for which the portfolio is to be used determines what is to be included and how it is to be arranged.

PRESENTING A TEACHING PORTFOLIO

While there are long-standing conventions on how to present academic qualifications, research and publications, teaching portfolios are relatively new. The recording of competence and effectiveness in teaching is at your initiative, in the same manner as the recording of your research and service accomplishments. The teaching portfolio concept enables you to take responsibility for what items or criteria to include or exclude. A teaching portfolio for appointment, promotion and tenure should be a relatively succinct document which contains information from a variety of sources. It would be wide to arrange the format of a teaching portfolio in a way that highlights teaching accomplishments and strengths, in order to create your desired impression. Particular emphasis ought to be given throughout to your achievements and to your distinctive and exceptional activities. Since the portfolio is a highly personalised product, no two will be exactly alike. The content and organisation will differ widely from teacher to teacher.

Not all items about teaching are valid and reliable for submitting in applications for appointment, promotion and tenure.

In this context, validity refers to the extent to which any given type of information is appropriate for the purposes of making a judgement about teaching. For example, graduates' opinions of your performance six years ago are not valid measures of your current teaching practice. However, recent samples of quality manuals or study guides written by yourself, reflect a valid qualitative measure of your current teaching practice. Furthermore, validity is enhanced by obtaining information from several different sources that will reflect a range of teaching activities.

Reliability refers to the extent to which information about teaching is dependable, stable and consistent. For example, reliable information about your teaching should include material collected over a reasonable period of time using measurement techniques that will consistently produce similar results.

Portfolios often begin with background information that establishes the context for the more specific evidence to be presented later. You may wish to include here details about your current and recent teaching responsibilities and practices (Table 2.1) as well as statements covering your personal teaching objectives (Table 2.2). An executive summary or contents page could aid clarity for the reader.

Following the introductory details, selected information on chosen teaching activities and solid evidence of their effectiveness can be presented. These should be aspects which are most applicable to both your teaching responsibilities and the criteria against which your portfolio is to

be judged. Prepare brief, factual statements of explanation which convey both the quantity and, more importantly, the quality of your work. You could arrange the statements in order of relevance and significance. Wherever possible, the teaching activities should be substantiated, or able to be substantiated, by supporting evidence. Areas to consider include:

- Teaching-related professional activity (Table 2.3)
- Information from students (Table 2.4)
- Information from peers (Table 2.5)
- If necessary, attach examples of exemplary materials in an appendix to the portfolio

The range of information about teaching that can be collected and presented is very broad indeed. The following is a suggested list from which to select items for inclusion in a teaching portfolio.

Table 2.1 Teaching Responsibilities

Item	Description	Comments
1. Subjects taught and supervised	List of course titles & codes, year, points value, enrolments, hours, level of responsibility, and a brief description of the way each course was taught. Number of honours and postgraduate students supervised. Research group activities directed. Schedule of times you are available to students outside class.	All of these items establish the context in which teaching occurs. They reflect workload and professional issues, not necessarily merit. Statements should be brief and focus on current and recent teaching. Earlier teaching can be listed summarily. This information provides context and background for judgements of other information and is valid where it reflects your normal duties. Reliability can be enhanced by referring to official departmental records.
2. Concurrent related duties	Concurrent teaching related duties and responsibilities e.g. course co-ordination	
3. Departmental expectations and resources	Summary statement of your department's policies, expectations and resources in relation to teaching. A statement by the head of department assessing your contribution to the department and how the department plans to use your skills in the future.	

Table 2.2 Personal Teaching Objectives

Item	Description	Comments
4. Teaching philosophy and methods	Summary of your own practices, approaches and attitudes and student learning. Evidence of the way you monitor or evaluate your classes and teaching. How you identify student difficulties and encourage participation in courses and programmes. Description of student assessment methods and rationales, and feedback to students. Methods in supervising postgraduate students. Summary of your qualifications and main strengths as a teacher	These items provide a basis for judgements of other information presented. This is an opportunity to direct attention to the areas you consider most important in your teaching. The information may be valid, but reliability of the statements must be confirmed by relating them to other evidence provided. Teaching merit can be established comparative data is provided to demonstrate superiority of practices.
5. Steps taken to evaluate and improve your teaching	Changes might be as a result of others' evaluation or self-evaluation, time spent reading journals on improving teaching, reviewing new teaching materials or exchanging course materials with colleagues.	
6. Teaching goals	A personal statement describing teaching aims, objectives and goals for the next five years.	
7. Representative course syllabi	Details of course content, objectives, teaching methods, reading lists, homework assignments, student assessment procedures, reflective statements as to the course construction.	

Table 2.3 Teaching-Related Professional Activity

Item	Description	Comments
8. Teaching innovations	Examples of innovations designed or adopted and their effectiveness. This might include work carried out as part of a teaching development grant or a video of your teaching.	Information about any of these activities substantiates your professionalism as a teacher. Merit may need to be demonstrated e.g. by special recognition, reviews, awards, comparisons with others or demonstrated leadership. Merit is also reflected by materials or methods which have been acknowledged by others and which subsequently have been used elsewhere.
9. Course, curriculum or departmental development	Revising, setting up or running a course, programme or internship. Contribution to the improvement of teaching in your department.	
10. Course and instructional materials	List and examples of quality course materials, manuals, outlines, new projects, assignments, study guides, reading lists, annotated bibliographies. Publication of a textbook or other instructional materials.	
11. Use of technology	Description of how audiovisual or computer-based materials were used in teaching.	
12. Teaching Research	Pursuing research that contributes directly to teaching.	
13. Teaching publications	Contributing to a professional journal on teaching in general, or in a specific discipline.	
14. Teaching associations	Participating in seminars, workshops and professional meetings intended to improve teaching and learning (e.g. UWA's Innovative Teaching Forum, HERDSA ¹ activities)	
15. Use of support services	Using general support services, such as CSD ² , in improving one's teaching.	
16. Teaching development	Participation in seminars, workshops etc. to improve your teaching and that of your discipline and institution.	
17. Teaching consultancies	Teaching consultancies in outside institutions and agencies or requests for demonstrations of effective teaching methods.	
18. Securing Grants	Success at securing grants for teaching related activities e.g. CAUT ³ grants.	

Table 2.4 Information from Students

Item	Description	Comments
19. Formal student feedback	Student, course and teaching feedback. Statements that such data has been collected (e.g. SPOT ⁴) and provide a short summary of the results. Also provide summaries from structured individual group interviews and from student committees. Include here any formal feedback from alumni or from postgraduate students.	Formal student feedback refers to properly designed, administered and interpreted student surveys. These provide reliable and valid information for establishing merit. Rules for the administration of student evaluations and processing of the data must have been observed and should be stated.
20. Informal student feedback	Unsolicited comments, including letters received and articles in student newspapers.	Informal student feedback may be unrepresentative of the opinions of all students taught, and can only be used for illustrative purposes.
21. Teaching awards	Awards for teaching excellence presented by student bodies.	These reflect merit, provided that they are officially recognised or have been appropriately refereed.
22. Student outcomes	What your students have learned and achieved. Student or class grades improvement on teacher-made or standardised tests. Exemplary student work: essays, creative work, reports, lab workbooks, publications, presentations on course-related work, advanced study and your influence on students' career choices.	Student scores need to have comparable data (e.g. previous course pass rates, norms, course pre-test/post-test). Exemplary student work presented must be as a direct result of your teaching methods and encouragement, and indicate development of technical or specialised skills. State % studying further in the field or your courses.

Table 2.4 Information from Peers

Item	Description	Comments
23. Formal peer feedback	Feedback from colleagues (team-teachers, subsequent course teachers, peers, HOD) regarding aspects of your teaching that are generally not evaluated by students (e.g. course development, content and administration, teaching materials, student assessment, text selection, reading lists, student support practices) and out-of-class activities such as instructional and curricular development and teaching research.	The reliability of formal peer feedback is enhanced by providing two or more evaluations over an extended period, by different colleagues.
24. Classroom observations	Reports from colleagues or independent observers who have viewed you in the classroom.	These are generally not considered valid or reliable for promotion applications for a number of reasons. Can be included as illustrative evidence that you are actively interested in developing and improving your teaching.
25. Assistance to colleagues	Evidence of help given to colleagues on course development or teaching improvement (e.g. contributing to departmental seminars or workshops, acting as a mentor, letters of acknowledgment or thanks). Professional exchanges with colleagues inside or outside the institution. This might focus on course materials or methods of teaching particular topics.	Information establishing that may of the rest of these activities (25 to 28) are undertaken substantiates the professionalism of yourself as a teacher. Merit may need to be demonstrated e.g. by special negotiation, awards, comparison with others, etc. Reliability is enhanced by retaining appropriate documentation.
26. Request for advice	Requests for or acknowledgment of advice given to committees on teaching or similar bodies.	
27. Invitations to teach, present or publish.	Invitations to teach from outside institutions and agencies or to demonstrate effective teaching methods. Invitations to present at conference on topics about teaching. Invitations to contribute to the literature on teaching.	
28. Teaching awards	Teaching honours or other peer recognition and awards for excellence in teaching.	

There are a number of sources of information to assist with the preparation of a teaching portfolio. Some of these are:

- Promotion or selection criteria of the University.
- University published booklets on teaching portfolios.
- University staff development services.
- Exemplary teaching portfolios.
- The National Tertiary Education Union (formally FAUSA) has published a booklet entitled *How to Compile a Teaching Portfolio*.
- Gibbs, G. (1989). *Creating a Teaching Profile* Technical and Educational Services Ltd, Bristol.
- Seldin, P. (1991) *The Teaching Portfolio* Anker Publishing Co., Bolton, MA.

FOOTNOTES

- 1 Higher Education Research and Development Society of Australasia
- 2 UWA's Centre for Staff Development
- 3 Committee for the Advancement of University Teaching
- 4 UWA's Student Perceptions of Teaching system

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SOME IDEAS AND ISSUES RELATED TO USING MULTIMEDIA TECHNOLOGIES TO TEACH TERTIARY STUDENTS TO PERFORM COMPLEX TASKS

INTRODUCTION

Cognitive tools are computer-based applications that are normally used as productivity software. However these applications may also function as knowledge representation formalisms that require learners to think critically using them to represent content being studied or what they already know about a subject. (Jonassen, 1995, 40).

In an extensive discussion of the value of cognitive tools, Jonassen describes how conventional applications, such as spreadsheets, databases, expert systems, etc., might become intellectual partners and serve to expand and amplify the thinking of learners, engaging students as knowledge constructors rather than information processors (Jonassen, 1995). The learning theories underpinning the development and our understanding of the value of such cognitive tools are reasonably robust, cognitivist based and are in a general sense, covered by the umbrella of constructionism. More particularly, the use and value of cognitive tools, has, of late, been shown to owe much to mental models theories, particularly to that of Johnson-Laird (Johnson-Laird, 1983; Wild, 1995).

This paper provides examples of how multimedia as user performance support systems (UPSSs) can be used by student teachers as cognitive tools to express and extend their thinking in a complex domain. The paper is also, in part, a report of a research project to develop and evaluate a UPSS to facilitate enhanced lesson planning skills in student teachers. The basic premise to the development of this UPSS is that it provides a structured environment within which student teachers are able to design lesson plans for immediate implementation and also receive instructional support in the design process. By engaging novices in the process of designing materials that impact directly on their teaching, it is intended to provide for deeper processing of a complex task, resulting in a more complete understanding of the domain. This is essentially the role and purpose of all cognitive tools (Jonassen, 1994; Jonassen, 1995).

USER PERFORMANCE SUPPORT SYSTEMS

A UPSS is interactive software that is intended to both train and support the novice user in the performance of complex tasks. Raybould describes an UPSS as a 'computer-based system that improves worker productivity by providing on-the-job access to integrated information, advice and learning experiences' (Raybould, 1990). Also, as Gery suggests, UPSSs can also serve as amplifiers of experience and knowledge - that is, in addition to their role in instructing and supporting novices, they can be used by more experienced specialists to increase efficiency and quality of output (Gery, 1991). Such software are being used successfully in training situations in medicine (e.g. medical diagnostic systems), engineering (e.g. computer assisted design systems) and management (e.g.

decision support systems). It would seem that there is value in using similar software in educational situations (Gustafson & Reeves, 1990; Reeves, 1993b).

A UPSS has been developed by the authors for use by student teachers. This UPSS is intended to facilitate the development of skills and knowledge in the area of lesson planning. The Lesson Planning UPSS (LPS) provides : (i) instructional software that teaches the skills and knowledge involved in lesson planning; and, (ii) support in the concurrent and subsequent performance of the lesson planning task. To date, instructional materials based on interactive technologies, have tended to focus on only the instructional aspect of task performance (Brown, 1991; Jih & Reeves, 1992). It is also contended that use of the LPS by student teachers in school and university settings will facilitate the transfer of cognitive strategies and minimise the distinction between 'learning and doing'.

THE DESIGN OF THE LPS

The LPS incorporates the model of lesson planning required by Edith Cowan University, Western Australia, and wider afield. It includes essential components of lesson planning such as writing learning objectives, developing learning experiences and planning evaluation. Each component is supported by activities that instruct the user about the task (e.g. provision of information relating to reasons why objectives are necessary, criteria for quality objectives), and which also assist the user in performing the task (e.g. provision of a database of verbs to assist in writing quality learning objectives). A set of software tools are available to support each activity. One of these, for example, is a knowledge base system, to provide student teachers with the ability to evaluate the effectiveness of their completed lesson plan. This works by prompting users to analyse and reflect upon the appropriateness of evaluation processes set in relation to lesson objectives.

The lesson planning process can be viewed as an exercise in problem solving. An important factor in solving problems is domain specific comprehension. Glaser has suggested that one of the features distinguishing a novice from an expert is the incompleteness of the novice's knowledge base, rather than limitations in their processing capabilities (Glaser, 1984). It has been suggested that the transition from novice to expert performance is largely provided for by the acquisition of a suitable knowledge base (Glaser, 1982). A knowledge base consists of both descriptive and heuristic components - descriptive knowledge is the shared knowledge of experts and practitioners that is usually found in text books, while the heuristic component includes the knowledge of good practice and judgement constructed over years of experience. It is suggested that the description of expert performance should include two related aspects: the information structures and declarative knowledge that are required for performance and the cognitive strategies and procedural knowledge that are required by the task.

Lesson planning is an essential cognitive skill for teachers. Effective lesson planners possess declarative knowledge about themselves as planners, about the task of lesson planning and about ways of going about the task. They also possess domain specific knowledge, such as the criteria for creating instructional objectives, the most appropriate strategies to achieve particular objectives and the range and relevance of evaluation techniques. They know how to plan lessons in the appropriate way, what is required of them in planning a lesson and they know when and why to perform particular aspects of lesson planning. In addition to this knowledge they have the skills to regulate their own performance, checking and monitoring to ensure they are meeting certain criteria. They also possess the skills and knowledge to allow themselves to correct errors. These characteristics of the lesson planner, the task and the interaction of both, are all addressed in the design of the LPS.

MULTIMEDIA DEVELOPMENTS

As Oliver suggests, the term multimedia is not a new one and has only received currency of late with the advent of computer based technological advancements and in particular, interactive technologies (Oliver, 1994). Perhaps the most notable if not the most distinguishing feature of interactive multimedia software in terms of its educational significance, is its facility to allow non-hierarchical representation of information - that is, it allows declarative representation of information with semantic and other links made between items to create a knowledge base. Interestingly, the educational application of knowledge representation tools was first highlighted by those working with the computer language Prolog who suggested that computer based semantic representation of knowledge perhaps best mirrored the behaviour of certain higher order cognitive activities (Nichol, 1988; Nichol, Briggs & Dean, 1988). This notion finds some theoretical basis in Minsky's theory of cognitive frame representation (Minsky, 1975) and, more recently, in mental models theories (Gentner & Stevens, 1983; Glaser, 1984; Johnson-Laird, 1983; Johnson-Laird, 1993; Wild, 1995).

To date, much of the software developed as interactive multimedia can be characterised as presentation, instruction or information systems. For education, the most widely applied multimedia software are of the latter types - instructional and information systems (Oliver, 1994). The LPS provides a new departure for multimedia development by providing software that encourages problem solving through cognitive modelling, that is the building and exploring of qualitative models. In this sense, users of the LPS are encouraged to create models of lesson plans and to explore, test and refine those models.

MODELLING

Modelling is an essential component of cognitive activity, of thinking, and for Craik, the originator of the concept of mental models, thinking is concerned with the organisational and functioning of mental processes and representations (Craik, 1943; Johnson-Laird, 1993). It follows that cognitive tools must necessarily provide for modelling activity. That is, they must provide the means by which learners can construct, manipulate and evaluate representations of knowledge. The modelling environment needs to be accurate and structural but not necessarily complete, enabling learners to move from their own mental representations of lesson planning to the conceptual model of that process required by an expert. In this process, novices will be able to construct a deeper understanding of a complex domain. It is generally agreed that although a modelling environment should not be complete it is important that it remains functional; that is, it must provide the learner with some expert knowledge and it must facilitate learner predictions (L.M.M.G., 1988; Mellar, et al., 1994; Wild, 1995). It is the incompleteness of the model that provides the opportunity for learners to externalise their own understanding of the lesson planning process, to identify inaccuracies or insufficiencies in their thinking and to reflect on their cognitive models without expressing a commitment to any one in particular.

TRANSFER

The LPS is based on the premise that student teachers, by using the LPS to model the lesson plan process will come to understand that process and be able to plan lessons effectively both through their use of the LPS and also by other means (e.g. pen and paper). A significant finding in transfer of learning research is that where there are common factors in the content or procedures in carrying out two tasks, transfer is more likely (Child, 1981). To facilitate transfer of learning here, the metaphor that guides the design of the human-computer interface is provided by traditional lesson planning: the LPS environment in which novice teachers plan their lessons uses similar terms and has similar elements to those encountered in the paper and pen process. Student teachers describe lesson objectives, associated teaching materials, methods of realising the objectives and evaluation

processes. At each stage, they can access examples, gain information from an appropriate knowledge base, obtain a critical analysis of their lesson based on an expert knowledge base and be prompted to reflect on their model of the lesson. The amount and type of human-computer interaction expected by use of the LPS is intended to approximate to that between learner and human tutor in a pen and paper context. In all these design aspects of the LPS, it is intended to provide for near transfer of learning. Follow-up research will investigate the effectiveness of the LPS in terms of facilitating such transfer.

NAVIGATION

The problems usually associated with navigating hypermedia are described by Collis and include disorientation, navigation inefficiency and cognitive overload (Collis, 1991). In particular, these problems can be expected to be encountered more by naive users who are not aware of the design metaphors built into the interface than by more experienced users. Without recognition of the design metaphor, users can be expected to access information inefficiently, for example, by following information browsing techniques (Trumball, Gay, & Mazur, 1992). It is intended that the pen and paper lesson planning metaphor that guides the design of the human-computer interface will support learners in their interactions with the LPS. This interface is intended to facilitate efficient navigation through the use of the tools necessary to build and evaluate lessons and the associated hypermedia environments that provide information in the form of text and graphics.

COGNITIVE LOAD

The greater the availability and accessibility of information within a given computer environment, the more likely users will flounder as a result of excessive cognitive load or cognitive overload and consequently fail to learn. According to Jih and Reeves, learners using a hypermedia system must cope with and integrate three types of cognitive load: the content of the information, the structure of the program and the response strategies available (Jih & Reeves, 1992). How learners cope with such a load depends largely on the human-computer interface. For example, cognitive load can be reduced by: (i) reducing the number of options at any one point in the program; (ii) by encouraging users to externalise their thinking, by use, for example, of text annotations and place-marking; (iii) by 'hiding' program options not likely to be needed by most users; (iv) by providing strong visual clues to aid navigation; and, (v) by reducing the number of hypermedia links between information nodes (Oren, 1990).

The means by which users deal with the cognitive load imposed by the LPS will largely be a function of their conception of the lesson planning task as well as that of the software interface. Certainly software features such as on-line help (i.e. help, for example, in planning the task) and dynamic structure maps (i.e. maps to show a user's position in the hypermedia environment at any one point), are included in the design of the LPS to encourage learners to build strong conceptualisations, or mental models (Jih & Reeves, 1992).

LEARNER CONTROL

Learner control is a reference to that dimension in computer based education that describes the level of control exercised by the learner when interacting with a given software item. Despite the fact that learner control has been one of the most heavily researched dimensions of computer based education in recent years (Steinberg, 1989), Reeves has pointed out that many of the research studies are flawed both in their theoretical and methodological bases (Reeves, 1993a). It seems to be popularly assumed that the greater the control exercised by the learner (as opposed to that exercised by the software) within a given software environment, the greater the level of learning will be. This assumption is undoubtedly a product of cognitivist learning perspectives, and is closely related to the following, fundamental, premises: (i) learners are active processors of information; and, (ii) knowledge is more

likely to be successfully constructed when learners have control over the learning process (Rowe, 1993). However, what evidence we do have about learner control is at best contradictory and at worst negative (Reeves, 1993a; Steinberg, 1989). In particular, Oliver draws attention to research that suggests that unskilled learners fare especially badly in terms of performance outcomes when the degree of learner control is high and external control (e.g. control by the program) is low (Oliver, 1994).

The LPS provides for significant learner control over a range of learning processes, including: task perception, information retrieval and processing, problem-solving, knowledge construction, revision, reflection and cognitive modelling. The research program to investigate the effectiveness of the LPS will, in part, consider whether the high degree of learner control invested in the software system effects performance outcomes.

CONCLUSION

This paper has sought to describe the design and development of a cognitive tool for student teachers, based on the implementation of multimedia as a user performance support system. It is implied throughout the paper, that UPSSs can provide valuable cognitive tools for both novice and more experienced specialists such as student and beginning teachers, to undertake complex tasks in a range of domains.

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DESIGN PRINCIPLES FOR SLIDES AND OVERHEADS

ABSTRACT

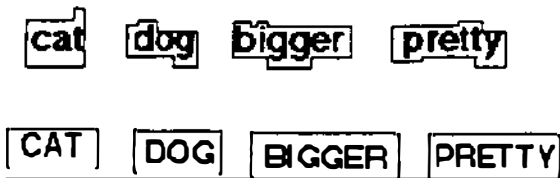
There is much research and literature available on the cognitive psychology of user-interface design; focusing on mental modes, language, highlighting information on complex displays and a conceptual approach to user interface design (Hicks & Essinger (1991), Gardiner & Christie (1987), Badre & Shneiderman (1982) and Ravden & Johnson (1989), but how does the average presenter or lecturer go about designing simple slides of text and graphics?

The Wharton School of Business has found that well designed electronic presentations can increase learning by up to 200%, increase retention by up to 38% and decrease the time taken for complex explanations by 25-40%. So what is good slide design?

This paper attempts to address the problems the average designer encounters - which is the most readable font for displayed text and for projected text; the implications of reading gravity; the use of colour; and special type effects.

TYPOGRAPHY

One of the major problems with electronic presentations, from the audience's viewpoint, is the fact that the typography is often difficult to read. Whilst it is very common to use the same typeface for both print and electronic media, the variables between the two media make it worth while exploring some of the implications of typography. Some of the fundamental principles of print media can be transferred to electronic media, particularly the use of all capitals and the use of underscore. Many presenters consider that capitals are bigger and are therefore easier to read, but in fact, the exact opposite is true. All capitals are considered to be a typographic sin (Endersby, 1993) as they reduce reading speed by 12% (Marcus, 1992:35) and use up 30% more space than proportionally spaced characters. The major problem with capitals is that the shape and colour of the words become identical unlike the lower case forms. The illustration below from Williams (1990, p 31) demonstrates this concept.



Underscoring words is another convention that has been abandoned by professional typographers, but the novice user still loves the underscore to emphasise words and phrases. The underscore can get tangled up with descenders, which again will retard reading speeds (Williams, 1990), for example:

The bigger dog growled loudly at the pretty puppy.

From this we can deduce that it is better to use lower case for the bulk of the type and to eliminate underscoring altogether replacing it with bold and italics for emphasis.

SERIF V SANS SERIF

Type is characterised by two main letter forms - serif faces and sans-serif faces. A serif face is one such as Palantino that has small ticks at the end of each stroke. Sans-serif typefaces do not have these ticks. In print based text it is usual to have a sans-serif typeface for headings and a serif face for the body of the text. The convention for projected images is the reverse (Talman, 1992:146). The serifs in a serifed typeface can cause confusion and clutter when projected and the thin parts of the strokes can virtually disappear. This can cause severe problems for visually impaired people (even those with slight astigmatism) and for the aging. Sans-serif faces, on the other hand, tend to be of even weights and have more open counters (the white space inside the rounded characters, such as "o"s and "a"s giving them a bigger x-height). This makes them legible in poor ambient light conditions and when magnified many times through a projector. Although an entire page of sans-serif type can be boring, a slide set in sans-serif can be very effective (Parker, 1990:293).

CHOOSING TYPE SIZE

The size of the type is also essential for legibility and there is a general rule of thumb that it should not be less than 18pts, although 24pts or 28pts is certainly better and the heading should be the next incremental size up (Talman, 1992:149). When designing slides, you should consider how much text is going to be on the slides and try to cut out non-essential words and phrases.

SPECIAL TYPE EFFECTS

Most screen presentation programmes come with many special effects to enhance the appearance of slides, but caution should be exercised. Too many effects and the slides will become annoying and readability will be seriously impaired. Some examples of special effects include the use of drop shadows, zooms, and transitions.

Transitions are perhaps the most overworked feature of presentation programmes such as Microsoft PowerPoint and Aldus Persuasion. A transition refers to the way in which the presentation moves from slide to slide and once discovered, presenters tend to try and cram every transition effect into one presentation. The biggest drawback with some of the transitions is that they can slow down the presentation (some are very time consuming) and can become a major distraction for the audience.

COLOUR

How to use colour effectively

The issue of colour tends to be rather confusing because of conflicting research on the subject. There is no question that coloured type reduces legibility dramatically and background colours inhibit comprehension, BUT there is an undisputed attraction value of colour. Colour appeals to the senses and creates associations with sight, sound, smell, touch and taste. The National Retail Merchants Association has found that if the object isn't familiar, colour will increase retention by 50% and our memory for colour is so strong that when we see black and white, we visualise colour. Hicks and Essinger (1991:107) also find that memory for colour attributes deteriorates less than memory for various shape attributes. This is important when attempting to exploit and display relationships between different things.

According to Shneiderman (1987 p337) colours soothe, attract, create interest, increase subtle discrimination, emphasise organisation and evoke emotional responses.

There is no question that working with colour is a highly subjective practice. Every culture sees colours differently and places different values on them (Brereton, 1994:48). Colour also effects our state of mind, from inducing depression to imparting a feeling of joy. (Birren, 1978:98). Studies have shown that people believe that colour enhances their learning, whereas the actual levels of performance may be quite different (Hicks & Essinger, 1991:107), although memory for colour information appears to be superior to black and white.

The challenge in designing a screen presentation, is to find colours that improve recognition, attract attention and communicate a concept. The key to this is to use simple colours and colour combinations. When planning the screen presentation, it must be remembered that the presentation is going to be projected, magnified many times, which may cause the colours to change, cause the saturation to weaken and can change the way the image looks completely. So what looks good on the computer screen may lose all impact when projected. The ambient lighting is also a strong factor. Most video projectors (most commonly RGB - Red Green Blue) and Liquid Crystal Display (LCD) projector panels require a low level of ambient lighting. This can change the way the colours appear.

Another consideration for the design process is to consider colour blindness. Approximately 8% of Caucasian males suffer colour blindness (Marcus, 1992:80) and as Hicks and Essinger (1991) discuss, colour blindness can take many forms, from the common red and green, green/blue confusions, through to total colour blindness, either through old age or congenitally caused.

When selecting colours, choose a minimum number. Hicks & Essinger show that the human mind has difficulty in maintaining more than five to seven elements in short term (active) memory simultaneously and Alessi & Trollip (1991, p 42) assert that more than four to seven simultaneous colours should be avoided, especially for beginning students. This is to reduce the cognitive load of new material. A good general rule, therefore, is to use a maximum of five colours plus or minus two. According to Marcus (1992:82) "this allows about an extra 20 seconds in short term memory which can store five words or shapes, six letters, seven colours and eight digits".

If too many colours are used, particularly bright colours, the eyes become tired trying to focus between them and reader productivity will suffer. Bright colours will have the same effect as they cause the pupil to contract and the action of dilating again when focusing on duller colours causes muscular tiredness.

Most presentation software comes with standard templates and the general background colour for slides is blue. The reason for this is that blue has a short wavelength and the eye's retina and fovea have few blue-sensitive cones making it a hard colour for the eye to focus on, and therefore making it an ideal background colour. (Hicks & Essinger (1991:109), Marcus, 1992:83). From a practical perspective though, blue backgrounds tend to be dark and with an already reduced ambient light, the reflection from the screen can be negligible. For slide projection this tends not to be a problem because there is a very strong light being focused through a small piece of 35mm film with rich colour, but for a data show or data projector, the colour tends to become diffused, the light source is not as strong and the general effect can be disappointing.

Red and green should be used in the centre of the visual field as the fovea (or eye focus) is more receptive to these colours and the peripheral vision of the eye is less receptive. (Marcus, 1994:83). A general rule is to use colours in the middle of the light spectrum as the focus colours and those at the extreme edges of the spectrum as peripheral or background colours.

Apart from these general rules, choose colours that work well together. An easy way to determine which colours go with which is to take the colour wheel resident in any Macintosh programme and draw an equal angled triangle with the first point sitting on the main colour you wish to use. The other two points will fall on contrasting but harmonious colours (Brereton, 1994). This is an important concept because contrast will hold the attention of the reader and contrast should be aimed for when selecting a colour for type.

SCREEN LAYOUT

When designing screens of text and graphics, it is important to keep in mind the way people read. The reader's eye is attracted either to the most brightly or only coloured object on the page and will then follow reading gravity. That is, it will wander down the page roving between text and graphics. In order to not transcend reading gravity, it is important that the most important object (and therefore the most eye-catching) is placed in the top half of the screen. All other text and graphics will be placed in a "z-pattern" in the bottom two thirds of the screen.

GRAPHICS

Graphics are another area where designers of presentations go overboard. There is now so much computer-based clip art available that designers feel they must include graphics on every screen or risk having boring looking slides.

It has been estimated that 75% of slides will be text based (Talman, 1992, p161) and the use of appropriate graphics can alleviate the visual monotony. The key words here are appropriate graphics because a common trap for the unwary to fall into is to put any graphic on the slide. This can be very confusing for the viewer because an immediate conflict between text content and the graphic occurs, and the main focus of attention becomes trying to solve the conflict and makes sense of the graphic, thereby overlooking important content. With the availability of digital cameras the reliance on clip art is no longer necessary and it is possible to include meaningful images in presentations.

CONCLUSION

Although there is a plethora of information available on designing for computer screens, there is relatively little on designing for projection. Much of what is available focuses on the cognitive psychology of design, and whilst this is tremendously valuable, the average presenter does not have the time to wade through it.

This paper attempts to provide a brief overview of the cognitive ergonomics of designing for electronic presentations with some (helpful) useful do's and don'ts for the unwary designer.

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A NEW APPROACH TO A COMMUNICATIONS UNIT: A STUDENT ORGANISED CONFERENCE

ABSTRACT

The development of effective communication skills is widely recognised as an important goal of university education and is valued by employers and needed for professional advancement. The second year Physics core unit 'Scientific Communication 202' was perceived by students as a 'non-science' unit and irrelevant to their academic and career aspirations. In order to deal with student concerns, we shifted the emphasis of the unit from teacher-centred instruction of 'generic' communication skills to student-centred learning of discipline-specific communication skills. Students, rather than being passive recipients of information, were given the ownership and responsibility for organising and participating in their own scientific conference. Student reaction has been very positive both in terms of the learning process and learning outcomes. The unit is now more effective for developing students' communication skills in the context of Physics. We believe that this innovative approach to teaching can be readily adapted in other disciplines.

BACKGROUND

The development of effective communication skills is widely recognised as an important goal of tertiary education. Unfortunately, students often perceive courses aimed at helping them develop communication skills as peripheral and largely irrelevant to their interests and needs. In this paper, we describe how we attempted to deal with such negative student perceptions by changing a communications skills unit to make it more student-centred and discipline relevant.

Prior to 1994, a second year Curtin University Physics core unit, Scientific Communications 202, was taught in two sections: a two hour a week lecture on generic written and verbal communication skills by the School of Communication and Cultural Studies (75% weighting of total assessment), and a one hour a week lecture or seminar primarily on research activities by the Department of Applied Physics (25% weighting). The two sections were taught largely independently of each other and hence the unit lacked cohesion and students perceived it as a 'non-science' unit and irrelevant to their academic and career aspirations. In response to feedback from students and staff, the unit was changed with the aim of making it more effective as a means of developing students' communication skills in the context of Physics.

In order to make the unit more integrated and 'student centred' with increased student involvement, we introduced a student organised and participatory scientific conference for the Physics component of the unit in the second semester of 1994. Students were asked to plan and present a one day Physics conference. This activity was selected because it:

- gave students an opportunity to be involved in an 'authentic' learning activity
- was student-centred which encouraged students to be active and take ownership of and responsibility for, their own learning

- provided a vehicle for students to develop and improve a range of communication skills including oral and written communication, information literacy, planning and running meetings, and negotiation and interpersonal skills
- encouraged co-operative group work and problem-solving
- encouraged students to research, prepare and present a Physics topic which they found personally interesting.

THE STUDENTS

Originally, 22 students enrolled in the Communications unit. However three students (2 females and one male) withdrew after two weeks. They stated that they were not willing to give the talk and as the unit is a Physics core unit, they planned to re-enrol the following year hoping that the unit would revert to the previous format, thereby avoiding the anxiety of delivering the talk. Of the 19 students (2 females and 17 males) who participated in the organisation of the conference and presented at the conference, three did not complete the requirements of the unit and in particular, did not provide the written papers for the conference proceedings.

Students were invited to assess each other's conference presentations and papers and to assess themselves in terms of participation in the course. After some discussion the students declined these invitations, preferring to leave all assessment to the staff teaching the unit.

ORGANISATION AND PRESENTATION OF THE CONFERENCE

The idea of a student-organised conference, publication of the proceedings, and the reasons for the new approach were explained to students in the first Physics class and the unit objectives were outlined. For the following week, students were asked to decide on a Physics topic they were interested in presenting at the conference and the overall theme for the conference, and to consider what sub-committees needed to be set up and to which committee they wished to contribute.

The students had no difficulty in finding topics of interest. Given the variation in the chosen topics the theme suggested by one student, David Ellement, as the 'Diversity of Physics' was very appropriate. The students set up the following sub-committees: Publicity; Publications; Program Structure; Monitoring Standards; Activities; Logo and Letterhead; and Registration and Treasury and decided on issues such as the theme of the conference, invited a keynote speaker, organised the venue, equipment, refreshments etc, prepared publicity material, presented papers and edited a proceedings volume.

The sub-committees met in their own time, and met as the Main Committee weekly for an hour before the normal Physics session at which the sub-committee chairs presented progress reports. The Physics lecturer provided suggestions on aspects of the conference organisation and information on specific topics, such as scientific publications and effective presentations. One subcommittee was able to obtain sponsorship of the \$800 required to print 100 copies of the proceedings (Mulder and Adams, 1994). The proceedings were judged by the National Library of Australia in Canberra to be of sufficient merit to be given an ISBN number.

Students decided that since they were going to the considerable trouble of organising and giving talks that there ought to be a genuine conference audience. They wrote to a number of local high schools inviting teachers and students to attend. Eight teachers and 110 predominantly year eleven high school students accepted their invitation. A number of staff from Physics, the School of Communication and Cultural Studies and a few first year Physics students also attended the conference. At the end of the day, all were asked to complete a feedback questionnaire.

The conference, entitled 'Diversity of Physics' was held on 26 September, 1994, the Monday of the week free from formal classes. David Ellement, the conference coordinator, opened the conference and Dr Jamie Biggs, the Government Astronomer at the Perth Observatory, gave the keynote address. Each of the 19 students presented for ten minutes and then responded to questions and comments from the audience for a further five minutes. Talks on similar topics were grouped together and chaired by students who kept presenters to time. The 'Program Committee' ensured that there were 30 minute breaks for morning and afternoon tea and 45 minutes for lunch. Students made a considerable effort to present their talks in a professional manner and at a level appropriate to the audience. Feedback from the participating students, teaching staff and the high school student audience indicated overwhelmingly that the conference was an outstanding success. Moreover, the students enjoyed the opportunity to share their interests in a wide range of Physics topics with an appreciative audience.

STUDENT REACTIONS

The innovation was monitored and evaluated by a member of staff from the Teaching Learning Group (the second author) by means of a mid-semester questionnaire, an end-of-semester questionnaire, observation of two Physics class sessions, attendance at the conference, a verbal debrief of the class at the end of the semester, and student written reports on the conference. There were also regular discussions with the Physics coordinator (the first author) throughout the semester.

Student feedback indicated overwhelming support for the innovation. In the mid-semester feedback, the most frequent comment was that the activity was a lot of work but very worthwhile, and fun. At the end of the semester, students were asked to give three adjectives to describe their reactions to the unit. Typical responses included: *Enjoyable, hard work, exhilarating. Demanding, motivating, satisfying. Enjoyable, exciting, challenging.*

Students also reported positively on their learning. In the mid-semester questionnaire, students mentioned a number of things they had learned by that point in the semester. These included: *Need to get started early enough* (this was the most frequent comment). *Need to be organised. Writing takes longer than you think. Importance of drafts and taking time between writing and reviewing. Ask friends to proofread paper. How to reference correctly. Write first draft for self - don't worry about mechanics. Need to research very well. Need to think of the audience. Internet is fun.*

The end-of-semester feedback showed that the majority of students (13 of 14 who completed the questionnaire) believed that the unit had met their learning needs. Student comments included:

Before I did this unit I was too nervous to speak in front of large groups or take responsibility. Following the conference I have learnt to control my nerves and am now reasonably confident in public speaking. That for me is a pretty major thing.

It helped my teamwork skills and increased my confidence in public speaking.

It gave me the opportunities to improve my writing skills, which other units often do not offer.

My main goal was to be able to be a more confident speaker, this was achieved. My written communication skills have also improved.

We largely governed what we wanted and needed to learn. We addressed many areas that we as students felt inadequate at.

Students also reported that they particularly enjoyed the emphasis on group work, interacting with other students and having ownership of the activity. Student comments included:

Having the conference as 'ours' working as a team, the group became much closer, ie. got to know each other better organising conference.

Being part of a team. Everyone wanted to do a good job. We had the enthusiasm and everyone supported each other to do their best.

The conference organisation and presentation, Why? It was a great confidence builder and showed better communication between peers.

Yes, because it was student owned. Mario gave us the opportunity to run the event ourselves. He gave guidance we asked. Also, the enthusiasm and camaraderie it evolved between the students.

Getting to know more of my classmates, and the general exposure to aspects of Physics - I hadn't encountered yet.

Getting to work with people I hardly knew before. The class was given ownership of the conference. It was our conference, our failure if we screwed up our success if we did well. It was good to be given that responsibility rather than be told what to do all the time.

Students expressed concern about certain aspects of the unit. These included:

- the amount of work in relation to the marks allocated to the Physics component of the unit - too few marks for the amount of time and effort put into the activity.
- some aspects of the 'English' component of the unit such as the emphasis on 'formatting' which students did not consider to be relevant.
- the lack of flexibility in the assignments and allocation of marks in the 'English' component of the unit.

LECTURER'S REFLECTIONS

The innovation appeared to work extremely well in meeting the goals which prompted the changes to the unit. Students were very active and tackled the various tasks related to the conference with enthusiasm and energy. Students interacted with each other a great deal and participated in class discussions and activities to a greater extent than had previously been the case in this unit. There was a shift in the role of the lecturer from the 'expert delivering content' towards responding to student needs as they arose and acting as a resource person and adviser. The lecturer believes that he was successful in this role and has contributed to the development of student skills in areas which will enhance their employability and professionalism as physicists.

Some concerns were expressed about the unit. There was difficulty in fully integrating the Physics Conference with the 'English' component of the unit because of the generic nature of communications curriculum which is taught in a number of units across the university. As a result, there was limited opportunity to change aspects of the content and assessment to accommodate student needs.

DISCUSSION AND CONCLUSIONS

The organisation and presentation of a conference as the focus for the development of student communication skills proved to be a great success. Students developed a range of communication and interpersonal skills, engaged in a 'real life' activity which gave them a chance to experience the intellectual challenge of organising and participating in a conference, an important aspect of a scientist's work, and experienced the highs and lows of taking ownership and responsibility for their own learning. The conference format also gave students a chance to interact with the wider

community and share their knowledge about Physics through the involvement of school students as the conference audience.

The approach which the unit took - developing student communication skills in the context of their subject study - is in line with the recommendations of the Curtin University Communication-in-Context report (Latchem, Parker and Weir, 1994) recently passed by University Academic Board, namely that Schools

develop their own communication skills policies based on the needs of their disciplines and students and the expectations of the professional bodies and employers and provide discipline-specific communication skills units and/or adopt Communication-in-Context approaches

It is also supported by research on the teaching of communication skills especially writing. Every discipline has its own language and conventions and these are best learned in the context of the discipline (Applebee, 1986; Cowen, 1993; Lee, 1991). Students learn to write in different subjects by writing in those subjects rather than by writing in general composition classes divorced from the content and language of the particular subject. Thus, it follows that it is the discipline teacher who is best placed to help students develop their communication skills in that discipline. Furthermore, students are more likely to develop discipline-specific communication skills when these are taught in context. A student based conference provides a useful vehicle for encouraging the development of discipline specific communication skills since preparation and presentation of conference papers is an integral activity of many if not all disciplines.

The students who participated in the Physics conference developed many important life skills, such as effective written and verbal communication, teamwork, self motivation, networking, organisation of meetings, and writing of scientific papers and reports. These are all crucial to the students' development as future professionals and for enhancing their employment prospects. The acquisition of these skills was the objective of the unit and the students clearly attained them.

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